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Differences in Kaplan Integrated Exam Scores Based on Institutional Factors

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Education in Adult and Lifelong Learning

by

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Abstract

Registered Nurses constitute the largest health care occupation in the United States. Current entry-level education for the profession of nursing is either an Associate Degree in Nursing (ADN) or Bachelor of Science in Nursing (BSN) (Altman, 2011). After successful completion of a nursing program, all nursing graduates must apply to take the National Council Licensure Examination (NCLEX-RN). The pass rate for first time United States educated NCLEX-RN exam test takers in 2017 was 87.11% leaving 12.89% unsuccessful (NCSBN, 2018). A nursing programs quality and recruitment are often influenced by a students' ability to pass the NCLEX-RN on the first attempt. Nursing educators are unable to accurately predict who will successfully pass the NCLEX-RN and look to outside companies to provide content mastery exams. Current literature provides numerous studies to predict indicators for success on the NCLEX-RN examination, however there is limited research on the Kaplan Integrated exams. Limited research has been conducted comparing ADN to BSN programs.

This study aims to determine if a difference exists on the Kaplan Integrated Exam Scores (Pharmacology, Management of Care, and Medical Surgical) between or among private and public institutions and 2-year (Associate Degree) versus 4-year (Baccalaureate Degree) Institutions. The results indicated public institutions scored higher on all three exams than the private institutions and ADN institutions scored higher on Medical Surgical and Pharmacology than BSN institutions. There was no difference between scores for ADN and BSN on Management of Care. All results should be interpreted with caution since the sample sizes were not equal.

Acknowledgements

To the members of my dissertation committee, Dr. Kit Kacirek (chairperson), Dr. Jack De Vore, and Dr. Mike Miller: thank you for generously providing your expertise and time in assisting me in completing this work. I would not have been successful without your continued support and kind words throughout this process.

Dr. Kacirek, I can only hope I am a quarter of the professor you are someday! You are whom I aspire to be when I grow up. You are patient, kind and always trying to understand your students and their life experiences. I promise it never goes unrecognized. Thank you for sharing your knowledge and expertise with me throughout my time in the program.

Dr. Miller, when you are told your stats guy is one of the smartest humans a person knows and also the Dean of the College; you have a pre-conceived notion of intimidation. My first time meeting you, I walked away from the meeting thinking “I want to be as smart as Dr. Miller one day”. I wanted to spend the day picking your brain! I cannot thank you enough for having patience with me during all my emails asking stats questions. You are truly an inspiration to all the students who are lucky enough to have you as a committee member.

Dr. De Vore, where do I even start? I told you I was graduating in May. Your tough love only pushed me harder to get there. Thank you for being such a special part of my family! Thanks for all the first of the month Friday night dinners and peps talks. You kept me motivated and on target which was just what this OCD girl needed. I am so glad you will be standing next to me on the final day of this journey!

Dedications

This dissertation is dedicated to the five most significant people in my life. Without their unconditional support and love I would not be the person I am today. They have continued to support me when there were times I am sure they wanted to pull their hair out for decisions I am not sure why I even made.

1. To my mom and dad: I am so beyond blessed to be able to call you my parents. Thank you for standing beside me when I am sure there are a million times you wanted to throw in the towel. I can't imagine life without you both. I am truly the luckiest girl alive to have you as my mom and dad. You have taught me hard work, ethics, morals, humor, and even when you want to: never quit. Thank you for all your support in earning this doctorate!
2. Sissy and Becky: I wasn't blessed with two aunts; I was blessed with a Sissy and a Becky! Thank you for all your help and support during the last three years. You will never truly know how much you mean to my life or how significant you are to me!
3. Jay: Thank you for being my husband and my best friend. Thank you for being so patience and understanding as I took on this journey! I love you so much honey!
4. Sable Buddy, and Ginger: These words would not of even made it to print if it weren't for the three of you sitting beside me every weekend snuggled next to me to remind me I can do anything I put my mind to! I cannot imagine writing a huge project like this at a desk. I was supposed to write on the couch so the three of you had a place to snuggle next to!

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Chapter I

Background of the Study

Registered Nurses constitute the largest health care occupation in the United States. The nation's 3.1 million nurses work in diverse settings as frontline providers of health care services promoting the health of individuals, families, and communities. Registered nurses provide primary health care services, education, guidance, and counseling to millions of Americans proving nursing is an indispensable service to the American public. The profession of nursing began in 1854 with the mother of nursing, Florence Nightingale, who led a group of women to the Crimean War to care for British Soldiers. Upon her return, she started the first school of nursing at St. Thomas Hospital in London in 1860 organized around a set of ideas often referred to as the "Nightingale Principles" (McDonald, 2001).

In the United States, formal nursing education began in 1873 with three-nurse educational programs- the New York Training School at Bellevue Hospital, the Connecticut Training School at the State Hospital, and the Boston Training School at Massachusetts General Hospital. All three programs were based on the "Nightingale Principles" developed by Florence Nightingale and are acknowledged as the forerunners of organized professional nursing education in the United States (University of Pennsylvania, 2019). These three schools paved the way for similar schools, which would be called nurse-training programs. By 1900, there were 400-800 schools of nursing in the United States who were either owned or affiliated with hospitals that provided the students with the classroom education and clinical experiences needed to receive a diploma after the two to three years of training. The early educational programs were seen as apprenticeship training programs that utilized students for their intensive labor.

A study in 1948 known as the “Brown Report” written by Dr. Esther Lucille Brown, *Nursing for the Future*, recommended that nursing education move to colleges and universities. The Brown Report had the support of the National League of Nursing Education, the Association of Collegiate Schools of Nursing, and the American Association of Community Colleges (Matthias, 2010). Hospitals resisted until healthcare advancements began to transform and hospitals had no other choice but to support the move of nursing education to the four-year baccalaureate program. The four-year programs could not, however, produce nurses fast enough to keep up with a vast shortage facing the nation. Mildred Montag completed her dissertation research in 1950 proposing a 2-year program within the junior and community colleges that would result in an associate degree program for nursing (Matthias, 2010). The number of Associate Degree Programs (ADN) rapidly grew and doubled between 1952 and 1974. Current entry-level education for the profession of nursing is either an Associate Degree in Nursing (ADN) or Bachelor of Science in Nursing (BSN) (Altman, 2011).

After a nursing student completes all degree requirements for an Associate Degree in Nursing or the Bachelor of Science in Nursing, the student must apply to take the National Council Licensure Examination (NCLEX-RN). The National League for Nursing originally developed the NCLEX-RN exam in 1944 as the State Board Test Pool Examination (SBTPE) because each state was administering their own nursing licensure exam. The SBTPE was created to harmonize testing standards and make it easier for nurses to become licensed in more than one state. The National Council of State Board of Nursing, an independent, 501(c)(3), not for profit organization, took over the administration of the exam in 1978. Nursing graduates submit an application for licensure with the state board of nursing where they wish to be licensed. The fee to register for the examination is \$200. Once their state board of nursing approves the students,

they will receive their Authorization to Test (ATT), and they can register for a testing date with Pearson VUE Testing Center. Pearson VUE is the company that administers the NCLEX-RN exam.

The NCLEX-RN is a Computerized Adaptive Test (CAT) meaning the test will adapt as the nursing graduate answers each question. Graduates will receive a minimum of 75 questions to a maximum of 265 questions. Six hours is allotted for the exam. Once a graduate submits their answer, they cannot return to the question. The NCLEX-RN has a test blueprint that includes eight domains (Table 1). Graduates will receive questions from each domain. Results of the exam are available within 48 business hours of the examination. Graduates who do not pass receive a Candidate Performance Report detailing how the candidate performed in each of the content areas to help them prepare for the next exam. Passing the NCLEX-RN indicates the new graduate has become licensed as a Registered Nurse in the state in which they have applied to work.

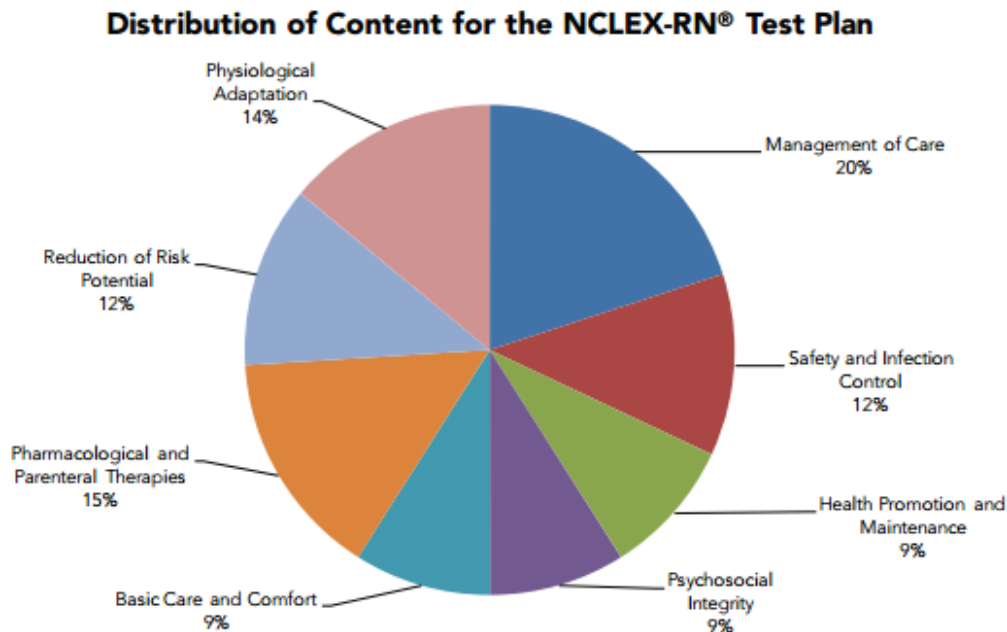


Figure 1. *National Council State Board of Nursing NCLEX-RN Test Plan*

The United States has a massive nursing shortage problem, and it is predicted to continue to grow. The Department of Labor Bureau: Labor of Statistics (2018) reports in 2016 there were 2.9 million Registered Nursing jobs with a projected growth of fifteen percent from 2016-2026. With the pressure of the nursing shortage, nursing programs face pressure to expedite entry of nurses into the workforce via first time success on the National Council Licensure Exam (NCLEX-RN). To increase the pressure further on faculty and administration, the National Council for State Boards of Nursing (NCSBN) increased the passing standard beginning in 2007 (Wendt & Kenny, 2007) with the passing standard being re-evaluated every three years. The NCSBN increased the passing standard due to a change in the United States health care system and an increase in the acuity of patients being seen in hospital systems nationwide. Patients admitted in the healthcare system suffer from more complex illnesses than in years past. The trend requires increased safety knowledge and excellent critical thinking capabilities of the licensed registered nurse. The three major causes of the nursing shortage include an aging population, an aging workforce, and a limited supply of new nurses.

When the Affordable Care Act passed, more Americans had access to healthcare increasing the number of patients needing to be seen in both acute and non-acute areas. More patients equal more assessments and evaluations and higher pressure to treat patients efficiently. Nurses are put at a higher risk for mistakes due to the increase in patient ratios. The baby boomers are going into their golden years projecting between 2010 and 2030 one in every five people will be a senior citizen, also increasing the number of patients being seen in the acute care settings (Dufilho, 2017). As the population ages, so will the nursing staff. It is predicted that one-third of the current nursing workforce is 50 years or older. The American Association of Colleges of Nursing reports a projection of 649,100 replacement nurses in the workforce

bringing the total number of job openings for nurses due to growth and replacements to 1.09 million by 2024 (2019). The state-by-state analysis reports the most severe shortage will be in the South and West.

The limited supply of new nurses is the most significant impact on the nursing shortage. The American Association of College of Nursing (2019) report on *2016-2017 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, “U.S nursing schools turned away 64,067 qualified applicants from baccalaureate and graduate nursing programs in 2016 due to insufficient number of faculty, clinical sites, classroom space, and clinical preceptors, as well as budget constraints” (p.2). Millennials are expressing interest in the field of nursing but are being turned away or waitlisted. For those students who do complete their degree requirements, not all will pass their licensure exam, which places pressure on both the student and the institution. If the student does not pass their licensure exam, they are faced with psychological shame as well as a loss of a promised job and financial commitments. The institution is faced with pressure from the State Boards of Nursing to meet expectations set by the boards to meet passing standards or be placed on probation and possibly lose their accreditations. Nursing program administrators and faculty are in search of resources to help students be successful on the first attempt of the NCLEX-RN.

Several companies provide content mastery exams for nursing programs to purchase to enhance student success and progression through nursing school. Companies such as Pearson, Health Education Systems Incorporated (HESI), Kaplan, Assessment Technologies Institutes (ATI), and Hurst provide content mastery exams that can aid in preparing nursing students for success on the NCLEX-RN (Hyland, 2012). Nursing school administrators and faculty are in

search of which product will be the best aide in preparing students for the NCLEX-RN. Every program offers testing and remediation options with resources for both faculty and students.

Statement of the Problem

The pass rate for first time United States educated NCLEX-RN test takers in 2017 was 87.11% leaving 12.89% unsuccessful (NCSBN, 2018). For students who repeated the exam, 45.56% were successful leaving 54.44% unsuccessful on a second attempt. The pass rate in 2016 for the first time United States educated NCLEX-RN test takers was 85.57% indicating a 2.54% increase in between 2016-2017. While the increase in pass rates is encouraging for both nursing school administrators and faculty, the NCSBN has not increased the pass rate since 2013. The NCSBN voted in December 2015 to uphold the current passing standard until March 2019, when another vote will determine if the passing standard should be increased. The passing standard has not been increased since April 1, 2013. This means nursing school administrators and faculty will be in search of companies who can provide resources to both nursing programs and students to enhance student's chances of success on the first attempt at the NCLEX-RN. Passing the NCLEX-RN exam on the first attempt is a priority for nursing programs because passage rates are a condition for accreditation. A nursing program's quality and recruitment are often influenced by a students' ability to pass the NCLEX-RN on the first attempt.

Purpose of the Study

The purpose of this quantitative investigation is to determine whether a difference exists on the Kaplan Integrated Exams Scores (Pharmacology, Medical Surgical, and Management of Care) between or among private and public institutions and 2-year (Associate Degree programs) and 4-year (Baccalaureate Degree programs) institutions. The Management of Care score was chosen because it has the largest percentage of the NCLEX-RN test blueprint at 20%.

Pharmacology has the second highest percentage at 15%. The Medical Surgical exam was chosen because previous literature has shown students with higher grades in Medical Surgical nurses are at a higher chance to pass the NCLEX-RN on the first write. In this research, the objective is to first determine if there is a difference in scores. If a difference in scores exists, could it impact whether a student attends a public versus private institution? Could it impact whether they attend a two-year versus four-year institution? Would a difference in scores impact their first write attempt at the NCLEX-RN?

Significance of the Study

The general problem is that nursing educators are unable to accurately predict who will succeed and who will fail the NCLEX- RN examination. Being unable to make accurate predictions, nursing faculty and administration cannot make needed curriculum improvements or changes to admission criteria toward increasing the ratio of successful outcomes as measured by the NCLEX-RN high stakes test. This study is vital to the field of nursing education because the goal of nursing program administrators and faculty is to graduate successful students on the NCLEX-RN first attempt to help with the nursing shortage. Indicating whether students' score higher on Kaplan Integrated Exams at public versus private, two years versus four years could indicate which programs are more successful at preparing students for the NCLEX-RN. It would also help students chose programs for future study. Currently, no research has been conducted on the Kaplan Integrated Exams.

Definition of Terms

The following definition of terms helps the reader to understand the terms presented by the researcher.

Associate Degree in Nursing (ADN): A nursing program offering an academic degree awarded after completion of a two-year course of study, usually at a community or junior college. The student who graduates is eligible to take the national licensing examination to become a registered nurse. (Mosby,2013).

Baccalaureate Degree in Nursing (BSN): The Bachelor of Science in Nursing occurs in a 4-year undergraduate educational entry level nursing program. The student who graduates is eligible to take the national licensing examination to become a registered nurse. (Mosby, 2013).

Content Mastery Exams: standardized tests that allow nursing programs to evaluate a nursing student's level of mastery of the content presented in the examination.

Management/Professional A Kaplan Integrated Exam: A 75 item test developed by Kaplan to assess nursing students' comprehension in the management and professional nursing concepts.

Medical Surgical Comprehensive A Kaplan Integrated Exam: A 90 item test developed by Kaplan to assess nursing students' comprehension of medical-surgical nursing concepts.

Pharmacological/Parental A Kaplan Integrated Exam: A 75 items test developed by Kaplan to assess nursing students' comprehension in pharmacological and parental concepts.

Private Institution: A private institution is supported by tuition, endowment, and donations from alumni and friends, and operates without the control of any government entity. Private institutions are free to discriminate in admission and expulsion procedures because of the First Amendment (Bingham, 2007).

Public Institution: A public institution is supported by state funds. Most have been founded and operated by state governments. Since they are an extension of the government, they adhere to strict policies and may not discriminate in acceptance and dismissal procedures.

Theoretical Framework

Bloom's taxonomy and the Knowledge base, Anxiety control, Test-Taking Skills (KATTS) framework are theories supporting the interpretation and application of the data and following conclusions. The theoretical framework establishes the perspective from which to understand the research topic under study. The National Council of State Board of Nursing (NCSBN) references the cognitive levels described in Bloom's taxonomy as the theoretical framework for the NCLEX-RN test plan and blueprint. Each cognitive level is dependent on the learning of the previous level. The Bloom's taxonomy domains include: (1) knowledge; (b) comprehension; (c) application; (d) analysis; (e) synthesis; (f) evaluation (Krathwohl, 2002). The following six levels of Bloom's taxonomy are based on the definitions of Manton et al. (2004):

1. Knowledge: requires the recall of facts and basic principles. Example: A student can recall an anatomical site or medication name.
2. Comprehension: requires the ability to interpret meaning from a set of data. Example: If a patient has chest pain, the student can comprehend and state the patient possibly has a heart attack.
3. Application: Requires ability to apply principles to new situations. Example: A patient complains of constipation, the student can assess for sign and symptoms of constipation, diagnose the patient, set a goal to restore normal bowel function, and implement appropriate nursing interventions.
4. Analysis: requires the ability to identify assumptions, spot errors of logic and distinguish facts from values. Example: A student can separate a concept into individual parts and learn how the parts relate to each other.

5. Synthesis: requires the formal process of putting ideas and thoughts together to have a complete picture. Synthesis is not typically utilized in the nursing domains.
6. Evaluation: requires formulating a judgment using ideas, methods, or solutions related to a problem. Example: The student can determine if an intervention is effective or not effective for treatment of a patient.

The National Council of State Boards of Nursing chief directive is for nursing students to develop didactic and clinical competency (NCSBN, 2011). State Boards of Nursing test for this competency with the NCLEX-RN examination. The primary construct the NCLEX-RN is testing for is safety. The NCSBN states, "Since nursing practice requires the application of knowledge, skills, and abilities, the majority of items are written at the application or higher levels of cognitive ability, which requires more complex thought processing." (2016). For a nursing graduate to pass the NCLEX-RN examination, they must answer questions based on Bloom's taxonomy in the Application and Analysis domains which are considered higher levels of critical thinking. Application and Analysis questions are considered above the pass line on the NCLEX-RN examination. If the student can only answer questions in the Knowledge and Comprehension domains, they will be unsuccessful in passing the NCLEX-RN examination because they are considered below the pass line and also considered unsafe.

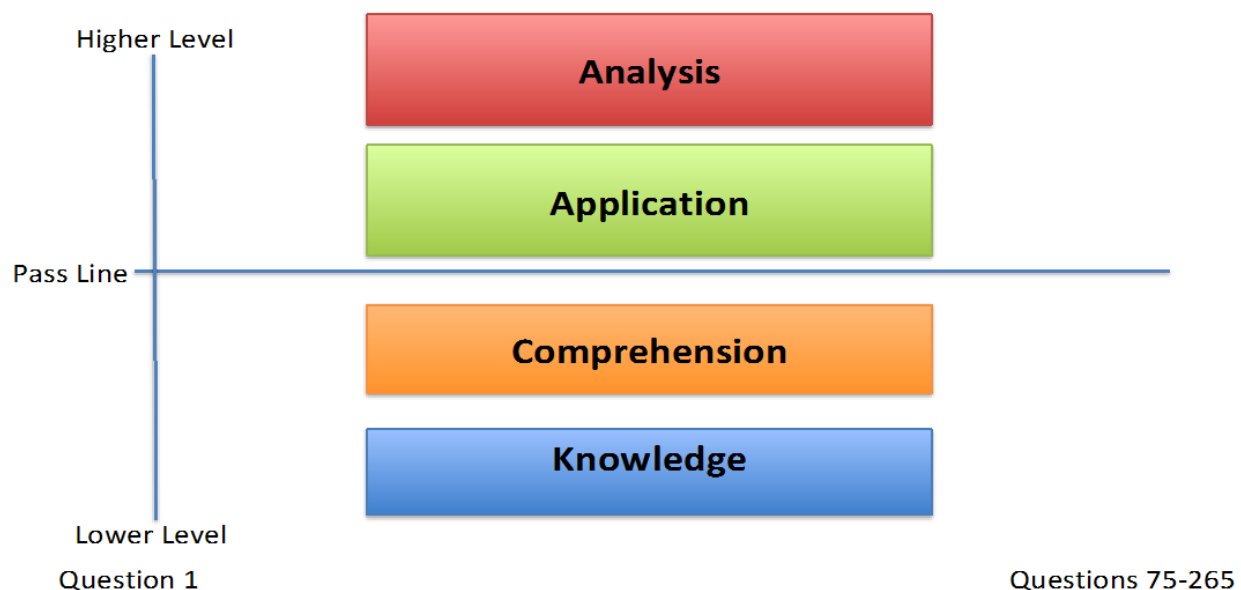


Figure 2. *Bloom's Taxonomy and the NCLEX-RN CAT test*

Kaplan has adopted the Knowledge base, Anxiety control, Test-Taking Skills (KATTS) theoretical framework throughout all their NCLEX-RN products. The purpose of the KATTS framework was to optimize NCLEX-RN performance and to help nursing faculty and students to prepare for the licensing exam (McDowell, 2008). Betsy McDowell created the framework in the early 1990s to structure remedial tutoring programs for the NCLEX-RN. The framework focuses on three components of achieving a maximum score on an examination: knowledge base, active anxiety control, and effective test-taking skills. According to the KATTS model, each side represents an equilateral triangle in which all three components must be present and in proper balance to maximize a student's score. If any of the three components is low, the score earned on the exam is lower than what the student could have achieved (McDowell, 2008). By strengthening all three components, the overall student test scores will increase.

Statement of the Research Questions

1. Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on public versus private institution enrollment?
2. Is there a significant difference in Kaplan Integrated Management of Care Exam scores based on public versus private institution enrollment?
3. Is there a significant difference in Kaplan Integrated Medical Surgical Exam Scores based on public versus private institution enrollment?
4. Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?
5. Is there a significant difference in Kaplan Integrated Management of Care Exam scores based on Associates versus Baccalaureate Degree enrollment?
6. Is there a significant difference in Kaplan Integrated Medical Surgical Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?

Limitations of the Study

The following limitations to the study existed:

1. The researcher utilized secondary data provided by Kaplan Inc. A major disadvantage of using secondary data it may not answer the specific research question of the researcher (Crossman, 2018). Since the researcher did not collect the data, the researcher has no control over what information is contained in the data set, which could potentially change the original research question the researcher sought to answer. Another disadvantage to secondary data is the variables may be defined or categorized differently than the researcher would have chosen. The last disadvantage

is the researcher does not always know exactly how the data collection process was carried out (Crossman, 2018).

2. The study did not focus on demographic variables, such as age, ethnicity, gender, or socioeconomic status of the student.
3. The data provided by Kaplan Inc was self reported data. Students answered an email stating whether they passed or failed their NCLEX-RN examination after graduation. This limited the sample size to only students who responded to the email and were truthful in their responses.

Assumptions

It is assumed the theoretical foundation that student performance on the NCLEX-RN licensing examination taken after graduation from a nursing program can be related to student performance on content mastery examinations taken during coursework is sound and not a limitation of the study. The peer-reviewed literature supports a relationship between performance on competency examinations taken during coursework and performance on the NCLEX-RN (Alamedia et al., 2011, Benefiel, 2011, Carr, 2011, Carrick, 2011). It is also assumed the Kaplan Integrated Exam Scores (Pharmacology, Management of Care, and Medical Surgical) are an adequate indicator of student academic achievement. The last assumption is the respondents who answered the mass email from Kaplan Inc answered the questions on the Kaplan Integrated Exams to the best of their knowledge and ability.

Summary

Chapter one discusses the problem, purpose, research question, theoretical framework, assumptions, and delimitations of the study. The remainder of the dissertation provides the reader with significant information on the literature review focusing on the history of the

NCLEX-RN licensure exam, content mastery exams, and predictors of NCLEX success. Future chapters will discuss the research design, target population and sample, procedures for sample selection, and data collection and analyses. The results of the study will be discussed along with the implications of the study findings and recommendations for future studies.

Chapter II

Review of Literature

Overview

NCLEX-RN first time pass rates provide a comparative indicator for program quality for Associate Degree and Baccalaureate Degree programs used by prospective students, State Boards of Nursing, and accrediting organizations. Nursing faculty is in search of the predictors of NCLEX-RN success to implement in their curriculums to ensure graduating students are successful. One strategy utilized to enhance nursing student success is purchasing outside programs providing content mastery exams. Nursing school administrators and faculty are in search of the best content mastery exam to help increase the programs NCLEX-RN first time pass rates.

Search Strategies and Terms

An extensive review of the literature resulted in a significant amount of information on the NCLEX-RN examination. However there was a limited amount of literature located for this research regarding Kaplan Integrated Exams. There was limited amount of research comparing Associate Degree nursing programs versus Baccalaureate Degree programs and no research on private versus public nursing programs. The library utilized was the University of Arkansas Fayetteville Library. Databases searched included: All Ebsco databases, all ProQuest databases, ERIC, Medline, CINAHL complete, Health Source Nursing Academic, and Journal at Ovid (Ovid Nursing Journals). For the study peer reviewed journals, books, dissertations, and nursing websites were used to complete the literature review. The search terms used were: NCLEX-RN, Kaplan Integrated Exams, standardized testing, high stakes testing, standardized content assessments, predictors of NCLEX-RN success, Kaplan and NCLEX, ATI, HESI, Private

institutions, public institutions, Associate degree nursing programs, Baccalaureate degree nursing programs.

Associate Degree in Nursing versus Baccalaureate Degree in Nursing

The profession of nursing remains in a decade long debate regarding entry-level education into professional nursing practice. Research has indicated nurses having a Baccalaureate degree provide more comprehensive care improving patient outcomes and decreasing mortality rates (Aikens et.al, 2003, Ridley, 2008, Krueger, L. et al, 2013). Leroy et al, 2014 found that both Associate Degree nurses and Baccalaureate Degree nurses had unique characteristics that contributed to quality patient care. The Associate Degree (ADN) nursing programs were started in the 1950's to help the nursing shortage occurring during the decade. ADN's were developed as an alternative to the diploma program and the Baccalaureate program (BSN). The diploma programs were seen as restrictive since they were offered for single young females located at boarding schools with strict admission requirements. Students lived in the dorm and studied at the hospital (Orsolini-Hain & Waters, 2009). BSN programs were time consuming, costlier, and required students to move away from home. ADN programs started at the community colleges therefore tuition was less, the curriculum was only two years, and the student did not have to move far from home.

Main Differences between ADN and BSN

The main differences between the ADN and BSN are the lengths of time it takes to complete the curriculums and the amount of credits required to graduate. An ADN typically completes two years of study while the BSN completes four years. Individuals who already have an Registered Nursing license can complete an RN to BSN bridge program from as little as twelve to eighteen months depending on the general education requirements. Traditional BSN

programs include all the course work taught in an ADN program, but also include more in-depth training in the social sciences, informatics, management and leadership, research, public and community health. BSN programs are focused on broadening the scope of practice for the graduate and increasing the opportunities for enhanced professional development. A main advantage to the ADN program is an individual can become a nurse faster, start earning and gaining nursing experience before their BSN counterparts. A BSN program typically can take four to five years to complete. However, new BSN accelerated programs have been created for students who already have a degree in a difference discipline.

Associate Degree programs attract the non-traditional students due to lower costs, convenient location, and shorter completion times. The annual tuition and fees of an ADN program at a community college is less than half that of a BSN program at a four year university and one tenth the tuition at a private four year university (Sabio, 2019). Since ADN programs only take two to three years to complete the cost is further reduced compared to the BSN education. Currently literature is indicating there is inconsistency in wage differentials between BSN and ADN graduates among employers (Graf, 2006; Megginson, 2008, Pittman et al., 2013). The ADN program allows quicker entry into the healthcare field. Studies show the Associates Degree is more economically advantageous to an individual compared to the BSN, therefore it is no surprise more non-traditional students are choosing the ADN pathway over the BSN (Graf, 2006; Lowry, 1992; Spetz, 2002, Spetz & Bates, 2013).

The Baccalaureate Degree does provide certain advantages to prospective students. The BSN degree will often position a nurse for promotion into managerial and leadership positions before the ADN nurse (Buhr, 2010). Employers often chose to hire BSN graduates over the ADN graduate, which has increased the growth in the ADN to BSN completer programs. Research has

indicated BSN graduates are being hired at a higher rate (92%) than ADNs (84%) four to six months after graduation (Feeg & Mancino, 2017).

Private versus Public Institutions

The literature review found very limited research on private and public institutions. A public institution is predominately supported by state funding (Bingham, 2007). Public institutions are founded and operated by state governments. They adhere to strict policies and may not discriminate in acceptance and dismissal procedures. A private institution is supported by tuition, endowments, and donations from alumni and friends (Bingham, 2007). Private institutions operate without the control of any government entity therefore they are able to have a freer hand in setting admission and expulsion policies.

There is no difference between a private and public nursing program as long as the school and curriculum have been approved. Public schools are usually cheaper. LeVeck, 2017 states “Private nursing schools typically cost between \$1000-\$2500 per credit hour. Upon graduation, tuition and living expenses can equal over \$150,000.” The cost incurred during school is something to consider when upon graduation an individual will likely be making \$50,000 per year as a new RN. Some private nursing programs are for-profit (proprietary) meaning the program is being run as a business.

Future RN candidate’s will chose private institutions over pubic due to the flexibility the program offers. Public institutions often admit once maybe twice a year in the Fall and Spring. The application process for a public institution can be long and there may be incredibly long wait list. Private institutions do not have a pre-determined number of slots, but may have a more rigorous pre-requisite requirement because they want to determine success on the NCLEX-RN exam. Students chose private institutions because often the school will not operate on a

traditional semester schedule and the student will have flexibility in scheduling. The student is allowed to take one course at a time with continuous enrollment.

The NCLEX Exam

History of NCLEX

Licensure for the nursing profession began in 1902 by the American Nurses Association (ANA) and the National League for Nursing (NLN) (Benefiel, 2011). North Carolina, New Jersey, New York, and Virginia became the first states to develop licensure laws for registered nurses (Benefiel, 2011; Comer, 2007). State boards of nursing established the standards for educational programming and developed examinations for new graduates, which included essay exams and clinical performance evaluations. By the 1940s, State Boards of Nursing faced pressure in regards to licensure due to World War II and the shortage of nurses. In 1942, participants at the National League for Nursing Education conference suggested a 'pooling of tests' whereby each state would prepare a machine-scorable examination in one or more subjects that could provide a reservoir of test items to test nursing students (Kelly & Booma, 1988) creating the birth of the National Council Licensure Examination for Registered Nurses (NCLEX-RN).

The National League for Nursing coordinated the development and administration of the NCLEX-RN until 1978 when the National Council for State Boards of Nursing (NCSBN) began overseeing the exam (Kelly & Booma, 1988). NCSBN provides a forum for legal, regulatory bodies of all states to act together in developing the licensing examinations (Ellis & Hartley, 2004). All state boards of nursing contract with the NCSBN for development and administration of the NLCEX-RN. In 1994, the NCSBN implemented a change to the NCLEX-RN exam from

paper and pencil to a Computerized Adaptive Test (CAT) providing a unique testing experiencing for each examinee test.

The NCLEX-RN Exam

All nursing graduates take the NCLEX-RN exam and are required to pass to obtain licensure as a Registered Nurse. The NCLEX-RN exam contains 75 to 265 test questions. Of those questions, 15 are unscored pretest items (O'Neil, Marks, Reynolds, 2005). A Computerized Adaptive Test, the NCLEX-RN allows each examinee an individualized testing experience and does not provide any two examinees the same exam (Woo, Wendt, & Liu, 2009). Examinees first complete a scorable test question. Once the examinee completes the scorable test question, the computer re-estimates the examinee's ability and subsequently selects another test item that will meet the test plan requirements with regard to content and difficulty level. The following test item will either be more challenging for the examinee or decrease in difficulty level based on the answer to the previous question. Once the examinee answers 75 questions, the computer attempts to determine with 95% confidence whether the examinee's actual ability is above or below the passing standard set forth by the National Council of State Boards of Nursing. The computer determines with 95% confidence if the examinee's ability is more than 1.67 standard errors away from the passing standard determining the examinee passed the exam. If the computer can not determine with 95% confidence, the examinee will be given another test question. The process continues until the computer determines the examinee has passed, failed, or until the time limit has been reached (O'Neil, Marks, Reynolds, 2005).

Methods Utilized to Set the Passing Standard

The National Council of State Boards of Nursing determined the passing standard for the NCLEX-RN in 2007 utilizing a criterion-referenced method: the modified Angoff procedure

(Wendt & Kenny, 2007). NCSBN chose the criterion-referenced method due to its ability to provide information on the specific level of knowledge and skills necessary to perform as an entry-level Registered Nurse. NCSBN evaluates the NCLEX-RN test plan every three years and determines the content of the examination. For the 2006 workshop, NCSBN selected eleven judges based on a variety of requirements including familiarity with the role of the entry-level RN. The eleven judges included mentors, faculty, preceptors, or entry-level nurses.

The National Council of State Boards of Nursing sent the eleven judges the 2007 NCLEX-RN test plan and asked them to develop a description of the minimally competent entry-level (MCEL) RN (Wendt & Kenny, 2007). The judges submitted their descriptions before the workshop for preparation, and the results were used during training to set the standards of the MCEL RN. Once at the workshop, judges began rating a representative sample of 180 NCLEX-RN items. Judges rated the 180 NCLEX-RN items based on the criteria out of 100 candidates, how many MCEL RN's would answer the item correctly. The judges focused on the candidates who *would* rather than *should* answer the item correctly (Wendt & Kenny, 2007). The judges' ratings were combined, summarized, and presented to them along with information on how well the MCEL RNs would have performed on each item. The judges were allowed the opportunity to discuss and provide a rationale for their ratings. Judges provided a second rating of the original items which were calculated and averaged providing the modified Angoff passing standard.

After completion of the Angoff method, the judges provided answers to three global questions. (Wendt & Kenny, 2007)

1. What percentage of the reference group (first time US educated) candidates do you think presently fail the NCLEX-RN?

2. What percentage of reference group candidates do you think are not competent to practice?
3. Of the 180 items that you have just reviewed, what percentage of those items do you think a candidate needs to demonstrate minimal competence?

The answers to question 2 were averaged and utilized for the Beuk Compromise method. The Beuk method utilizes both the Angoff method and the answers to the above questions to estimate the judges' perceptions of how an MCEL RN would perform. The Beuk method suggests a "compromise" recommended passing standard (Wendt & Kenny, 2007). The recommendations from the Angoff method and Beuk method are presented to the Board of Directors.

Setting the Passing Standard

In 2007, the National Council of State Board of Directors decided to increase the passing standard from -0.2800 to -0.2100 logits based on the recommendations from the panel of judges from the 2006 RN Standard Setting Workshop. The NCSBN defines a logit as "a unit of measurement to report relative differences between candidate ability estimates and item difficulties." (NCSBN, 2018, p.7). The Board of Directors utilized other sources of data in their decision-making process such as historical data on pass rates and passing standards, surveys from employers and educators, and educational readiness of high school graduates expressing an interest in nursing. The Board of Directors also kept in mind the current cost of health care, the safety risks posed to the public when awarding a license to a candidate who does not indeed have the knowledge or skill, and denying a license to a candidate who is genuinely competent (Wendt & Kenny, 2007). Increasing the passing standard in 2007 meant nursing graduates needed an increase in knowledge, skills, and ability to pass the exam.

Currently, the NCSBN Board of Directors re-evaluates the passing standard every three years when the test plans are reviewed (NCSBN, 2018). The Board of Directors looks at the following information when considering the evaluation of the passing standard: historical records of the passing standards and candidate performance; opinions of employers and educators regarding the competency of the current candidate of entry-level nurses; and the educational readiness of high school graduates expressing an interest in nursing based on American College Testing service (ACT) scores. In 2012, the Board of Directors voted to raise the passing standard from -0.16 logits to 0.00 logits. The passing standard was implemented in 2013. In December 2015, the Board voted to uphold the current passing standard for the NCLEX-RN with the current level of logits remaining at 0.00. This pass standard will remain in effect until March 31, 2019 (NCSBN, 2018).

Types of Testing

Standardized Testing

Standardized testing continues to be a significant source of debate in the United States. Numerous books have been written on the pros and cons of standardized testing. Ainsworth (2013) defined standardized testing as a test administered consistently to a large body of students. The Glossary of Education Reform (2015) defined standardized testing as a test "(1) requiring all test takers to answer the same questions or a selection of questions from common bank of question in the same way, and that (2) is scored in a standard or consistent manner, which makes it possible to compare the relative performance of individual students or groups of students." (p.1). Types of standardized testing include the following: admissions requirements for college such as ACT, SAT, and GRE, diagnostic testing to assess achievements such as the Stanford Achievement Test and the California Achievement Test, and testing for other purposes

such as IQ tests, professional certification exams, or a driver license exam. Other standardized tests utilized for entrance examinations to various academic programs include the Law School Admission Test (LSAT), Medical College Admission Test (MCAT), and Graduate Management Admission Test (GMAT).

ProCon (2016) argues that standardized testing has both positive and negative aspects. The pro argument for standardized testing includes: reliable and objective measurement of achievement, improved academic performance, inclusive and non-discriminatory, focus on essential skills content motivating students to excel, cheating is rare, and most teachers and administrators approve of standardized tests. The con argument includes: does not address students learning styles, minorities are discriminated against, does not take into consideration external factors that can impact a student on test day, and funding often rests on students' performance on these tests increasing the stress on educators and students.

For nursing educators and students, the NCLEX-RN is the most important standardized test. Passing the NCLEX-RN is a requirement in all 50 states in the United States to receive a nursing license and begin practicing as a Registered Nurse. The licensure exam protects the public and the nursing profession by ensuring those who take the NCLEX-RN exam can practice safely. The primary construct the licensure exam test on is basic patient safety. In 2017, 157,720 US-educated students sat for the NCLEX-RN exam with a pass rate of 87.11% (NCSBN, 2018). NCLEX-RN failure has significant consequences for graduate nurses, hospital organizations, and schools of nursing (Landford & Young, 2013). Graduate nurses put immense pressure on themselves and increase their anxiety when contemplating the consequences of failing the NCLEX-RN. Consequences include financial constraints to pay for the exam again, loss of a first RN job, and looming student loan payments. There are also numerous psychological impacts

such as low self-esteem, a decrease in confidence, guilt, shame, fear, and questioning the decision to become a nurse. Nursing programs are tasked with adequately preparing graduate nurses to pass the NCLEX-RN on the first attempt. Nursing program administrators and faculty are in constant search to identify resources that will assist students who are at risk for failing the NCLEX-RN (Zweighaft, 2013). Some nursing programs have utilized standardized testing as high stakes testing to determine nursing students progress through the program.

High Stakes Testing

A high stakes test is an examination, which holds great significance for the examinee. Jones & Ennes (2018) state testing becomes high stakes when the outcomes are used to make decisions about promotion, admissions, graduation, and salaries. Advocates of high stakes testing claim the tests clearly define what is to be learned. By reporting scores, teachers and students will be more motivated to do well. Policymakers have advocated increasing the use of high stakes testing as a mechanism to rank and label schools. Public use of test scores leads to indicators of schools instructional program quality. Schools that perform well are rewarded with monetary gains and schools that underperform are often faced with penalties, which can lead to the replacement of administrators and teachers. Exams such as the SAT and Graduate Record Examination are considered high stakes tests used for admission requirements into Graduate programs. Sackett, Bornemann, & Connelly (2008) claimed that after completing high school most young adults continue their education, enter the workforce, or join the military. All three settings have a long history of utilizing standardized testing for selection decisions. Creators of high stakes tests often do not take into consideration random circumstances that can impact test design and scoring.

High stakes testing in nursing has been defined as tests used to make essential decisions or lead to significant consequences for students, educators, or the school accountable for the education (Hunsicker & Chitwood, 2018; March & Robinson, 2015). Nursing high stakes tests are linked to progression, graduation, and NCLEX pass rates for students. The National League for Nursing defines high stakes testing as the use of standardized testing to block graduation or a way to deny eligibility to take the NCLEX exam (NLN, 2017). State boards of nursing set first-time licensure exam pass rates. Pass rates vary from state to state, but schools of nursing must achieve the first time licensure pass rates to maintain accreditation and credibility from state boards of nursing. In 2013, nursing programs began to implement high stakes testing due to the decline in NCLEX pass rates. The purpose of high stakes testing was to predict success with a nursing program and ultimately predict the likelihood a nursing student would pass NCLEX on the right attempt. The literature supports both positive and negative consequences to high stakes testing in nursing.

The literature supports high stakes testing has positive consequences for nursing students. These tests encourage students to study more, be better prepared, and to take testing more seriously. Nursing students have an increase in motivation to study and an increased awareness of the seriousness of a high stakes test (March & Robinson, 2015; McClenny, 2016; Santo, Frander, & Hawkins, 2013). Students perceive high stakes testing as a valuable learning tool to help develop study skills and increase confidence in test taking (McClenny, 2018). Students also viewed high stakes testing as a way to improve critical thinking skills and nursing knowledge (McClenny, 2016). Spurlock (2013) stated that high stakes testing allows a nursing student to practice taking standardized examinations, which may lead to decreased anxiety when taking the NCLEX.

The literature also supports negative consequences for high stakes testing. Stress was cited throughout the literature as the most significant contributing factor for nursing students in regards to high stakes testing. Students reported an increase in stress both during and before taking a high stakes test (McClenny, 2016; Tagher & Robinson, 2016; Roykenes, Smith, & Larsen, 2014; Santo et al, 2013). Tagher & Robinson (2016) reported that students attribute stress to not progressing to graduation and increased workload during school. The delay in progression to graduation leads to financial implications, which ultimately increased stress levels for nursing students. Ultimately the increase in stress impacts a nursing students ability to cope and learn (Vogel & Schwabe, 2016).

Other negative consequences found in the literature include a bias against students with English as a second language and minorities (Santo et al, 2013). Students question the value of high stakes testing as a valid measure of the predictor of NCLEX success (McClenny, 2016). When high stakes testing is implemented as a progressions policy, students take longer to complete impacting their debt load and delaying work opportunities (Sullivan, 2014). Nursing students unable to progress through a program may have to re-enroll in a course, change majors, or drop out of college entirely. Students may also pursue litigation or file grievances if high stakes testing is used and the information is absent from handbooks or is initiated mid-curriculum (Hunsicker & Chitwood, 2018). All these situations impact a nursing students financial loss. High stakes testing should not be the sole measure to make decisions about nursing student progression and completion.

Standardized Content Assessments

To increase NCLEX success rates and recognize at-risk students many schools of nursing have purchased standardized testing packages. Companies such as Assessment Technologies Institute

(ATI), Kaplan, and Elsevier make standardized assessment programs available to nursing schools throughout the United States. These companies promote predictive and remediation capabilities of their admission, content, and NCLEX predictor exams (Frank, 2016).

Standardized content assessments occur throughout the nursing curriculum providing a better opportunity to predict at-risk students and assist with remediation programs (Yeom, 2013).

Research is not available on the Kaplan Integrated exams.

A limited number of studies have investigated the relationship between ATI Content Mastery exams and NCLEX pass rates. ATI content examinations are utilized to identify student success in nursing programs. The ATI Content Mastery Series consists of nine proctored assessments (Frank, 2016). Each exam consists of 50 to 90 questions written by experts in the field. Nursing faculty proctor exams and student results are reported in percentages. "The ATI content mastery examinations establish a percentage result that is used to indicate a proficiency score in the nursing curriculum of the student" (Rietz-Robinson, 2016, p. 7). The outcome of the student's performance is then used for benchmarking. ATI created a Comprehensive Predictor exam, which is a multiple choice, multi-question test created to assess a student's readiness to take the NCLEX. Several studies have been conducted on the ATI Comprehensive Predictor exam in relation to NCLEX success while very few studies have been conducted on the ATI content Mastery exams.

Emory (2013) performed a non-experimental quantitative retrospective case study examining the relationship between nursing students scores on the ATI (a) Fundamentals (b) Pharmacology and (c) Mental Health scores and NCLEX outcomes. Data was collected from 167 baccalaureate nursing graduates between fall 2008 and spring 2010. An independent 2-sample t-test compared the mean ATI content mastery scores with the outcomes of the NCLEX.

Statistically significant different scores between groups on the pharmacology and fundamentals exams existed, while the mental health scores were not statistically significant different between groups. Using stepwise logistic regression, the pharmacology assessment projected NCLEX results with 73.7% accuracy, but the fundamentals and mental health scores did not influence model.

A second study by Yeom (2013) utilized ATI content mastery exams and the potential to predict NCLEX failure. Yeom evaluated whether the adult medical-surgical, fundamentals, pharmacology, maternal-newborn, pediatric, mental health, community health, and leadership and management scores could predict NCLEX outcomes. Data was collected from 151 baccalaureate nursing graduates between May 2010 and December 2011. A t-test showed statistically significant differences between nursing students who passed the NCLEX and those who failed in the scores of all the ATI exams except for fundamentals and pediatrics, which did not show a significant difference. Utilizing logistical regression, adult medical-surgical, pharmacology, and community health assessments predicted NCLEX success.

A third study by Reitz-Robinson (2016) investigated whether a predictive relationship existed between the scores on seven of the ATI content mastery exams and outcomes of the NCLEX. The seven exams included: fundamentals for nursing practice, maternal-newborn, pharmacology, adult medical-surgical, nursing care of children, mental health, and the RN comprehensive predictor. The non-experimental descriptive correlational design examined 350 nursing students scores from a 2-year community college program who took the NCLEX for the first time between January 2011 and December 2015. The percentage scores on the adult medical-surgical exam and pharmacology exam were significant predictors while the remaining five exams did not support the predictability of NCLEX success.

Predictors of NCLEX Success

Passing the NCLEX-RN on the first attempt is regarded as a critical indicator of program quality for all nursing programs across the United States. Preparing nursing students for success is, therefore, a high priority for both nursing school administrators and faculty. Decades of research have been dedicated to identifying potential predictors of first attempt success on this high stakes test. Independent variables have included but not limited to: grade point average, HESI exam scores, specific nursing course grades, ACT scores, SAT scores, socioeconomic status, preadmission science grades, math scores, and prepackaged products. Samples have included nursing students from diploma, associate degree, and baccalaureate programs from all over the United States.

Cosper and Callan (2018) conducted a mixed methods research study on 75 students and 25 faculty members finding that baccalaureate grade point average, HESI exam scores, and adult health II course grades were all predictors of NCLEX success. Jenkins (2016) found the ATI comprehensive predictor exam to be a reliable indicator of NCLEX-RN success on 111 associate degree-nursing students and Reeve (2014) confirmed the finding in their study on 201 baccalaureate students. Reeve (2014) also found ATI Pharmacology exam scores to be a strong predictor of NCLEX- RN success as well as cumulative grade point average.

Meyers and Karpinski (2018) conducted a retrospective cross-sectional study looking at ACT scores and socioeconomic status in terms of Pell Grant eligibility. The study found the higher someone scored on the ACT; the better they were projected to perform on NCLEX-RN as long as they had Pell grant eligibility (SES). There was no relationship between Pell grant eligibility (SES) and NCLEX-RN success independent of ACT scores.

Olbrych (2018) conducted a binary logistical regression study on 786 graduates from an associate degree program and found there were positive relationships between pre-requisite grade point average, nursing grade point average, cumulative grade point average, and final course grade in one medical-surgical course. Porter's (2017) retrospective predicative correlational study on 550 associate degree nursing students found a strong correlational between NCLEX-RN success, nursing grade point average, and the ATI Test of Essential Academic Skills (TEAS) scores.

Robert (2018) conducted a retrospective descriptive correlational study on 245 associate degree-nursing students finding there was a statistically significant relationship between the HESI A2 scores and NCLEX success. The study found there was no relationship between math grades and NCLEX-RN success. Synder (2018) found that students with higher admission grade point averages and higher ACT or SAT scores were more successful on the NCLEX-RN exam. Grade point averages were greater than 3.0, ACT scores were 22 or greater, and SAT scores were 1080 or higher on the newer SAT.

Harvilla et al. (2018) instituted a comprehensive mentorship program to improve pass rates among 207 baccalaureate students. Students were from both traditional and accelerated programs. Eight to nine traditional students were assigned one faculty while the program coordinator served as the mentor for the accelerated program. Faculty mentors facilitated engagement in NCLEX-RN review courses, computerized learning platforms, and testing packages. Students were required to take the HESI exit exam and score a minimum of 850 for the first two years of implementation. Total grade point average and HESI Exit Exam scores were found to be significant predictors of passing the NCLEX-RN. The study concluded that faculty mentorship is crucial for first time NCLEX-RN success.

Lown and Hawkins (2017) examined whether the identification of a student's learning style preferences using the Assessment Technologies (ATI) Self-assessment Inventory (SAI) served as a predictor of first time NCLEX-RN success. There was no significant relationship between individual learning style preferences and NCLEX success, but there was a statistically significant relationship found between students who prefer group learning and risk of failing the NCLEX for the first time.

Kaddoura et al. (2017) compared potential predictors of first attempt NCLEX success in graduates from first degree and second degree accelerated baccalaureate-nursing program. First-degree graduates were more likely to speak English as a second language, have lower grade point averages, score lower on the HESI exam, and have a higher proportion of grades lower than a C. First-degree graduates were found to more likely fail the NCLEX-RN than the second-degree graduates. All four variables (English as a second language, lower GPA, HESI scores, and grades lower than C) were significant predictors of success on the NCLEX-RN exam.

Kaplan NCLEX-RN Products

Research on Kaplan Products

Jefferys et al. (2017) conducted a study on 15 nursing students at a Historically Black College and University to determine the effectiveness of Kaplan's educational modules for the NCLEX-RN. Students were given the Kaplan Diagnostic Test followed by test-taking strategy educational interventions. The students were then given the Kaplan Readiness test to determine if the educational sessions were beneficial. Results revealed there was a statistically significant relationship between the pre-test/post-test scores. The results suggest having a test-taking strategy module will have an overall effect on post-test scores. The 15 students had a 100% pass rate on the NCLEX-RN.

Salvucci (2015) compared the Kaplan diagnostic exam scores of associate degree nursing students to NCLEX-RN outcomes because the literature is lacking on the Kaplan diagnostic exam. “The review of empirical literature on standardized exit testing is vast, but there is a gap in literature as it relates to the Kaplan diagnostic examination” (Salvucci, 2015, p. 113). The researcher found the Kaplan diagnostic exam scores to have a significant relationship with NCLEX-RN outcomes. Students who scored higher on the diagnostic exam were more likely to pass the NCLEX-RN on the first attempt than students who scored lower on the exam.

McKoy (2016) conducted a study on the Kaplan Nursing School Entrance Exam on 94 baccalaureate nursing students. The purpose of the study was to determine if there was a relationship between the Kaplan Entrance exam scores and first-year nursing course grades and student attrition. The results indicated performance on the Kaplan Entrance Exam has a significantly positive relationship with early academic success. As the Kaplan Exam scores increased, the likelihood of early academic success increased. 48% of the students completed the nursing program. Results indicated performance on the Kaplan Entrance Exam has a significant positive relationship with program completion.

Burckhardt (2004) conducted a study on 1030 students who graduated from nursing programs across the United States and took their NCLEX-RN between the Spring and Fall of 2003. The purpose of the study was to determine if a relationship exists between the scores on the Kaplan Diagnostic Exam, the Kaplan Readiness Test and the probability of passing the NCLEX-RN on the first attempt. The results indicated that the scores on both the Kaplan Diagnostic Exam and the Kaplan Readiness Test were statistically significant for predicting the probability of passing the NCLEX-RN.

Edwards (2015) examined national standardized exam scores of prospective nursing students who took a concept-based curriculum versus a content-based curriculum. A concept-based curriculum is a 3-dimensional model providing a foundation and structure for delivering nursing content based on defined concepts and their applications. The curriculum fosters critical thinking and deemphasizes content. A traditional-based curriculum is a 2-dimensional model providing a topic-based curriculum focusing on factual content and skills. The curriculum focuses on the transfer of knowledge rather than developing critical thinking skills. The national standardized chosen to measure students' knowledge were the Kaplan Readiness Exam and the Kaplan Diagnostic exam. Results of the study found exam scores for both the Kaplan Diagnostic exam and the Readiness exam were significantly higher for the concept-based curriculum compared to the traditional content-based curriculum. The research findings were used to implement a policy change.

Santiago (2013) examined whether the ATI Comprehensive exam and the Kaplan Readiness test could predict both success and failure on the NCLEX-RN. 219 students took the ATI comprehensive predictor exam. Of those 219 students, 100 failed the ATI predictor exam on the first attempt. Out of the 100 who failed, 84 passed the NCLEX-RN on the first attempt translating to 84% passing. The ATI Predictor exam predicted these students would have 71% change of passing the NCLEX-RN. The study questions the predictive ability of the ATI exam to forecast failure. The findings of the study showed no significant relationship between the Kaplan Readiness test and the NCLEX-RN. However, only 100 students took the Kaplan exam so further study is recommended to validate the findings. The author reports it is unknown why only 100 of the 219 sample took the Kaplan Readiness exam.

Research on Kaplan Integrated Exams

Only one research study was found on Kaplan Integrated Exams in the literature review. Frank (2016) conducted a study at Messiah college on junior nursing students to determine the effectiveness of the Mayfield's Four Questions test taking strategy education on Kaplan's Medical Surgical I integrated exam scores. The study was conducted because Kaplan's integrated tests were being administered throughout the nursing curriculum but no remediation program had been implemented for low scoring students. Frank (2016) examined the Medical Surgical I integrated exam scores of students who received the Mayfield's Four Question education to those students who had not received the education. The researcher found no statically significance between the two group means.

Summary

The current literature provides numerous studies to predict indicators for success on the NCLEX-RN examination, however there is limited research on the Kaplan Integrated exams. Limited research has been conducted comparing ADN to BSN programs. Most of the research regarding predictors of success on the NCLEX-RN focuses on data from one nursing program either an ADN or BSN program. . Research studies are specific to individualized nursing programs and have limited generalizability. With a push for hospitals to hire more BSN graduates more research needs to be conducted on the comparison of ADN to BSN program outcomes since more students chose the ADN program due to financial and time constraints.

Chapter III

Methodology

The purpose of this quantitative investigation was to determine whether a difference exists on the Kaplan Integrated Exams scores (Pharmacology, Medical Surgical, and Management of Care) between or among private and public institutions and 2-year (Associate Degree) and 4-year (Baccalaureate Degree) institutions. Three exams were chosen based on the NCLEX-RN blueprint and previous literature: management of care, medical-surgical, and pharmacology.

Research Questions

1. Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on public versus private institution enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Pharmacology Exam scores based on public or private institutions enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Pharmacology Exam scores based on public or private institutions enrollment.

2. Is there a significant difference in Kaplan Integrated Management of Care Exam scores based on public versus private institution enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Management of Care Exam scores based on public or private institutions enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Management of Care Exam scores based on public or private institutions enrollment.

3. Is there a significant difference in Kaplan Integrated Medical Surgical Exam scores based on public versus private institution enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Medical Surgical Exam scores based on public or private institutions enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Medical Surgical Exam scores based on public or private institutions enrollment.

4. Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Pharmacology Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Pharmacology Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

5. Is there a significant difference in Kaplan Integrated Management of Care Exam scores based on Associates versus Baccalaureate Degree enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Management of Care Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Management of Care Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

6. Is there a significant difference in Kaplan Integrated Medical Surgical Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?

Null Hypothesis: No differences exist in the Kaplan Integrated Medical Surgical Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

Alternative Hypothesis: Differences exist in the Kaplan Integrated Medical Surgical Exam scores based on Associate Degree versus Baccalaureate Degree enrollment.

Research Design

A casual comparative research design was employed to determine whether a difference exists on the Kaplan Integrated Exam Scores between or among private and public institutions and Associate Degree and Baccalaureate Degree nursing programs. The casual comparative design involves comparing outcomes from groups but there is no experimental manipulation by the researcher (Creswell, 2015). This approach involves selecting two groups that differ on some variable of interest (private vs. public, ADN vs. BSN) and comparing them on a dependent variable (Kaplan Integrate Exam Score). The casual comparative approach is practical for this study because the researcher was provided unidentified data and cannot manipulate the conditions. Creswell (2015) states a disadvantage to this approach is no probable cause and effect can be established because no control group is utilized as a basis for comparing results. Therefore, the researcher is only able to say an association exists between the independent and dependent variables.

Population

The study population for this research included nursing students enrolled in Associate Degree or Baccalaureate Degree nursing programs located at private or public institutions. The population inclusion criteria encompasses students who are enrolled in nursing programs assigning nursing students the Kaplan Integrated Exams as part of the programs nursing curriculum. The population included students completing the Kaplan Integrated Exams in either Spring or Fall of 2017 and Spring of 2018. The population is students self-reporting to Kaplan Inc whether or not they passed or failed the NCLEX-RN examination. Originally there were 926

students responding to the mass email from Kaplan, however not all students took all three chosen Kaplan Integrated exams for this study.

Data Collection Instrumentation

No data collection instrument was needed for this study because Kaplan Inc provided the unidentified data to the researcher. The researcher utilized the Statistical Package for the Social Sciences (SPSS) software to enter, review, and analyze the data.

Data Collection Methodology

Kaplan Inc provided the unidentified data utilized for this study. Kaplan sent a mass email to all the students taking an integrated exam in the years 2017-2018 asking if they had passed the NCLEX-RN examination. Once the student responded stating yes or no, Kaplan identified the students integrated exam scores for the study. There were initially 926 respondents. The data set includes: 467 management of care scores, 549 medical-surgical scores, and 481 pharmacology scores. There were 191 institutions represented for the study.

The original data set received by Kaplan included: institutional name, a Kaplan user id, a test id, the name of the test, the number of questions for the exam, the number of questions the student correctly answered, and whether the student passed or failed the NCLEX-RN. Kaplan provided institutional names so the researcher could identify characteristics of the school, but asked for the schools not to be identified in the study. For the purpose of the study, the researcher used the following from the data set. The institutional names only to identify if the schools were public versus private, two years versus four years, and what state the institution is located. The researcher gave each student their own student id for coding purposes. The only exams used were Management of Care, Pharmacology, and Medical-Surgical. If students did not take those exams, they were not used in the study. A spreadsheet was created utilizing the student's number

of questions for the exam and the number of questions the student answered correctly to determine their overall percentage on the exam. These overall percentages will be utilized for data analysis.

An application to the Institutional Review Board (IRB) was submitted and determined exempt because the study utilized a secondary data set provided by Kaplan Inc. The researcher submitted an application at the University of Arkansas IRB and received approval for the study. The protocol 1810155168 was submitted and determined review not required by the University of Arkansas at Fayetteville's Institutional Review Board.

Data Analysis

To examine the research questions, an independent sample t-test was conducted to assess if differences exist on the dependent variable (Kaplan Integrated Exam Scores) by an independent variable (Institutional Factors). An independent samples t-test is the appropriate statistical test when the purpose of research is to assess if differences exist on a continuous (interval/ratio) dependent variable by a dichotomous (2 group) independent variable. The continuous dependent variable is the Kaplan Integrated Exam scores: Management of Care, Pharmacology, and Medical Surgical. The dichotomous independent variables are institutional factors with groups: private versus public and two years (associate degree) versus four years (baccalaureate degree) (Field, 2015). The t-test will be two-tailed with the probability of rejecting the null hypothesis set at $p < 0.05$. This ensures a 95% certainty that the differences did not occur by chance (Field, 2015).

According to Laerd Statistics (2015), in order to run an independent samples t-test, six assumptions need to be considered.

Assumption 1: One dependent variable is measured at the continuous level. All three dependent variables (Kaplan Integrated exams, Pharmacology, Management of Care, and Medical Surgical) were all measured from 0 to 100.

Assumption 2: One independent variable consists of two categorical, independent, dichotomous variables. The independent variables are institutional factors including: ADN versus BSN and private versus public.

Assumption 3: There is independence of observations, meaning there is no relationship between the observations in each group of the independent variable or between the groups themselves. The participants in the groups either attend private or public institutions or they are attending an ADN or BSN program. The participant cannot be attending both.

Assumption 4: There should be no significant outliers in the two groups of the independent variable in terms of the dependent variable (Laerd, 2015). Outliers are values extremely large or small compared to the other scores. Outliers can have a large negative effect on results because the outliers can exert a large influence on the mean and standard deviation for that group, which can affect the results (Laerd, 2015). For all six-research questions, there were outliers. The outliers were assessed and removed to help with normal distribution. The scores have been placed in a table for viewing in the results section. Scores above 85% and below 55% were determined to be outliers. Kaplan Inc sets the average passing score on any Kaplan exam as 70%. Outliers will be discussed further in the results section.

Assumption 5: The dependent variable should be approximately normally distributed for each group of the independent variable (Laerd, 2015). Normality was determined by looking at skewness, kurtosis, and visually inspecting the histograms. A z-score was calculated for skewness and kurtosis by dividing the skewness and kurtosis values by their respective standard

errors (Laerd, 2015). “You can be quite conservative with skewness and kurtosis and accept a statistical significance level of .01, which equates to a z-score of ± 2.58 .” (Laerd, 2015, p.1). If your z-score is within ± 2.58 your data is normally distributed.

Inspecting a Histogram is a popular way to understand if data is normally distributed. When inspecting a histogram a researcher is looking for the classic bell curve shape. Histograms were visually inspected for all the independent variables.

Assumption 6: Homogeneity of variances means the variance is equal in each group of the independent variable. If sample sizes are quite different, the independent samples t-test is sensitive to the violation of this assumption (Laerd, 2015). Homogeneity of variance assumes that both groups have equal error variances and was assessed using Levene’s Test for Equality of Error Variances.

Effect sizes utilizing Cohen’s d was calculated on all the research questions. An effect size is an attempt to provide a measure of the practical significance of the result (Laerd, 2015). A simple bar chart of the results with 95% confidence intervals is also presented for each research question. Laerd (2015) states if the groups of the independent variable are not based on an underlying continuous scale a bar chart is to accompany results of an independent samples t-test.

Summary

The purpose of this quantitative investigation was to determine whether a difference exists on the Kaplan Integrated Exams scores (Pharmacology, Medical Surgical, and Management of Care) between or among private and public institutions and 2-year (Associate Degree programs) and 4-year (Baccalaureate Degree programs) institutions. In the study, the population originally included 926 respondents, but not all respondents completed the three

identified Kaplan Integrated Exams. Only respondents who completed the Pharmacology, Management of Care, and Medical Surgical Kaplan Integrated Exams were used. The data set includes: 467 management of care scores, 549 medical-surgical scores, and 481 pharmacology scores. There were 191 institutions represented for the study. All students represented in this study attend a private or public institution and are enrolled in an ADN or BSN program. Kaplan Inc provided unidentified data, which included: institutional name, test name, number of test questions, and number of test questions answered correctly. The data was coded into SPSS. To examine the research questions, an independent sample t-test was conducted to assess if differences exist on the dependent variable (Kaplan Integrated Exam Scores) by an independent variable (Institutional Factors).

Chapter IV

Results

The purpose of this quantitative investigation was to determine whether differences existed on the Kaplan Integrated Exam scores (Pharmacology, Medical-Surgical, and Management of Care) between or among private and public institutions, and 2-year (Associate Degree programs, ADN) and 4- year (Baccalaureate Degree programs, BSN) institutions. The three Kaplan exams were chosen based on the NCLEX-RN blueprint and previous literature. The data was an unidentified data set provided by Kaplan Inc.

Data Results

To examine the research questions, an independent sample t-test was conducted to assess if differences existed on a dependent variable (Kaplan Integrated Exam Scores) by an independent variable (Institutional Factors). An independent samples t-test is the appropriate statistical test when the purpose of the research is to assess if differences exist on a continuous (interval/ratio) dependent variable by a dichotomous (two group) independent variable. The continuous dependent variables are the Kaplan Integrated Exam Scores: Pharmacology, Medical-Surgical, and Management of Care. The dichotomous independent variables are institutional factors with groups: private versus public and two years (ADN) versus four years (BSN) (Field, 2015).

Question 1: Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on public versus private institution enrollment?

H₀: No differences exist in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$)

H_A : Differences exist in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$)

H_0 : $\mu_{\text{private}} = \mu_{\text{public}}$

H_A : $\mu_{\text{private}} \neq \mu_{\text{public}}$

There were outliers in the data, as assessed by the boxplot (Figure 3). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

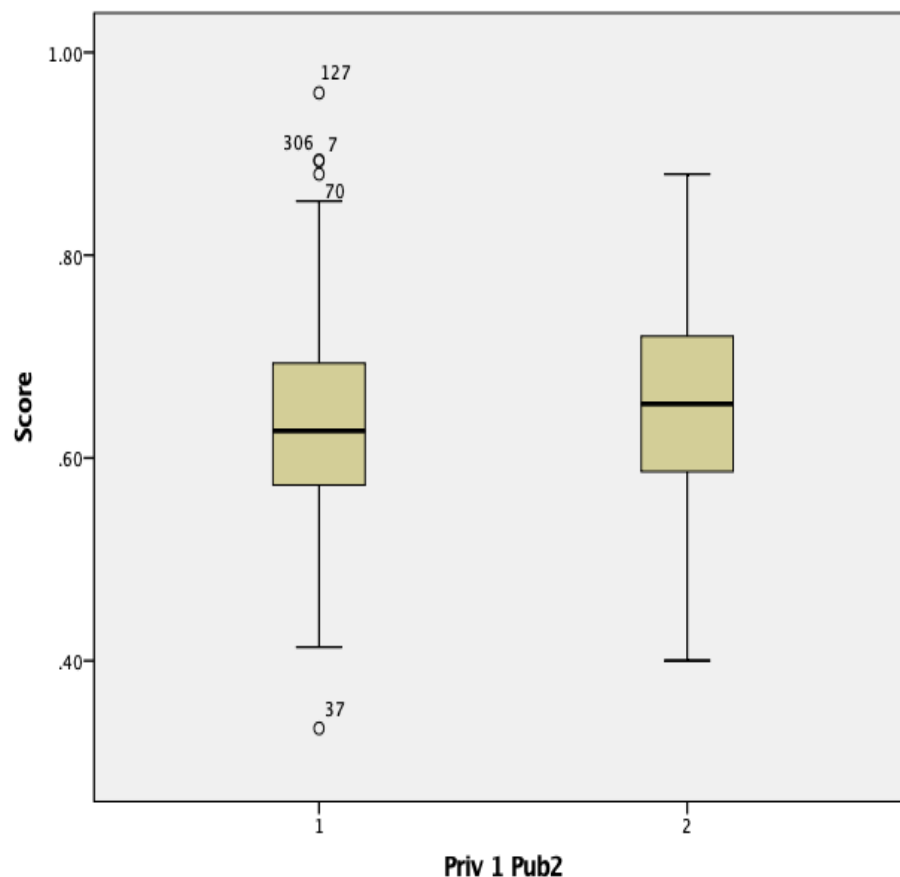


Figure 3: Outliers: Pharmacology Private vs Public Institutions

Table 1: Outliers Scores Identified: Pharmacology Private vs. Public

Private		Public	
Identifier	Score	Identifier	Score
127	.96		
306	.89		
7	.89		
70	.88		
37	.33		

The recommended scores for a Kaplan exam are 70%. Reviewing the scores for the outliers, the scores could be considered unusual data points. The outliers were removed and the descriptive test was run again to determine if outliers still existed (Figure 4).

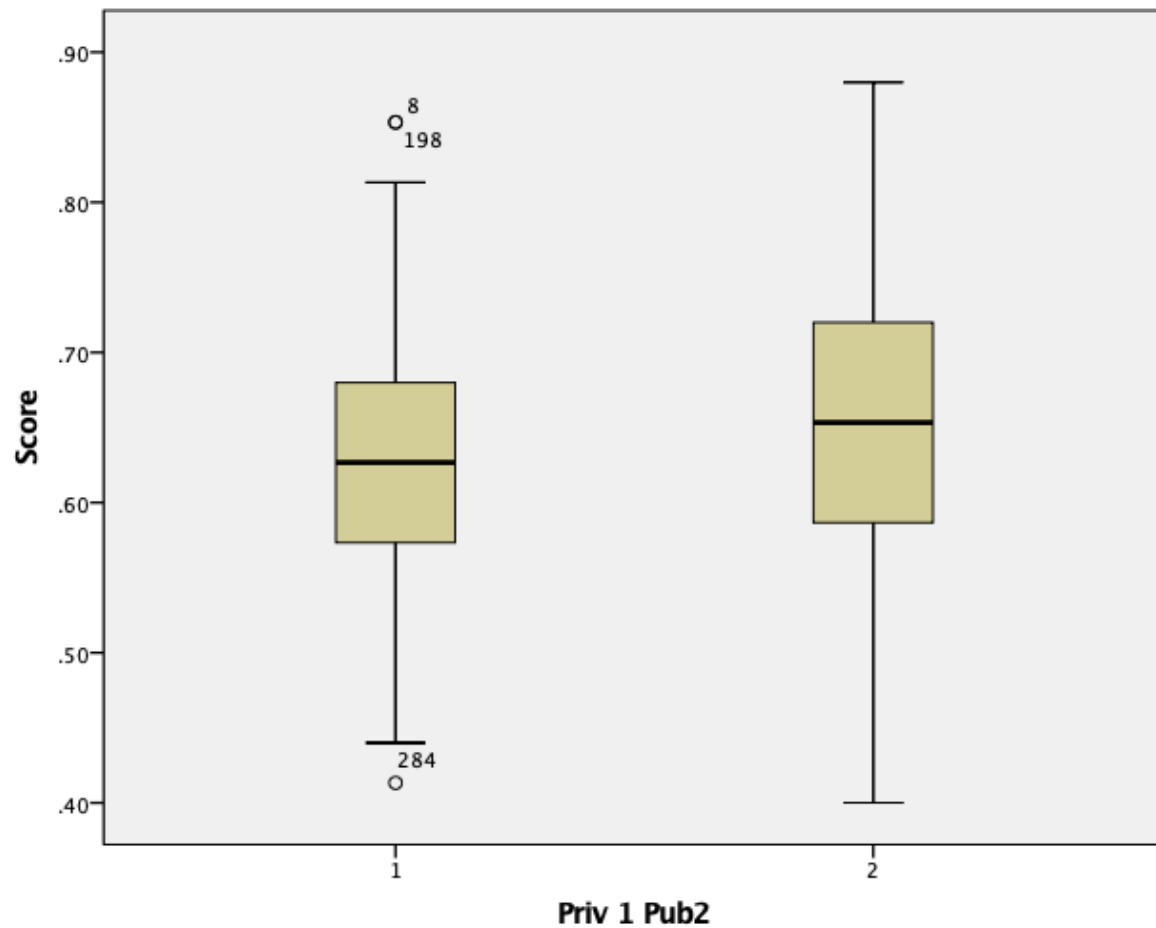


Figure 4: Outliers: Pharmacology Private vs Public Second Run

Table 2: Outliers Scores Identified: Pharmacology Private vs. Public Second Run

Private		Public	
Identifier	Score	Identifier	Score
8	.85		
198	.85		
284	.41		

The following outlier scores (Table 2) were identified and determined to be unusual data points in relation to the recommended 70% Kaplan score. The outliers were removed from the data so the scores would be normally distributed.

Pharmacology scores were normally distributed for private institutions with a skewness of .012 (standard error = .175) and kurtosis of -.388 (standard error = .347) and for public institutions with a skewness of -.099 (standard error= .146) and kurtosis of -.316 (standard error .291).

Pharmacology scores were approximately normally distributed for both private and public institutions, as assessed by visual inspection of their histograms (Figures 5 & 6).

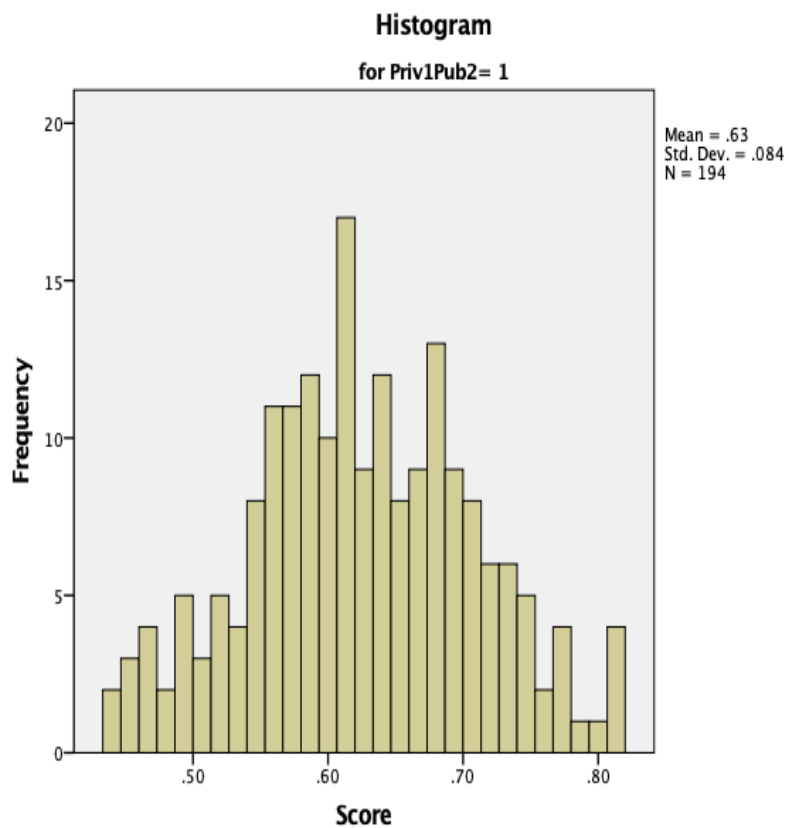


Figure 5: Histogram-Pharmacology Private Institutions

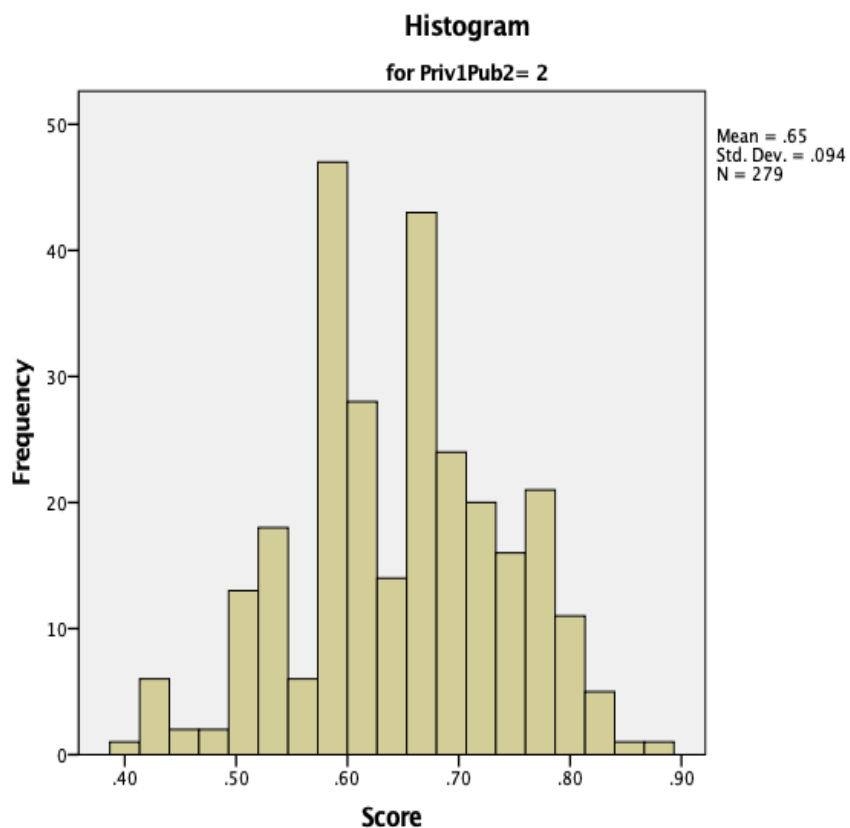


Figure 6: Histogram-Pharmacology Public Institutions

Table 3: Group Statistics: Pharmacology Private vs. Public

	Priv 1 Pub2	N	Mean	Std. Deviation	Std. Error Mean
Score	1	194	.625	.0836	.0060
	2	279	.650	.0943	.0056

There were 194 private institution scores and 279 public institution scores. The public institution pharmacology scores are higher ($M = .6506$, $SD = .094$) than private institutions scores ($M = .625$, $SD = .836$) (Table 3).

Table 4: Independent Samples T-Test Pharmacology Private vs. Public

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	3.079	.080	-3.022	471	.003	-.0254	.0084	-.0420	-.008
	Equal variances not assumed			-3.088	444.29	.002	-.0254	.0082	-.0416	-.00926

There was homogeneity of variance for pharmacology scores for private and public institutions, as assessed by Levene's test of quality of variance ($p=.080$) (Table 4).

There was a statistically significant difference in mean pharmacology scores between private and public institutions. This should be interpreted with caution, as there were considerably more public institutions scores ($n=279$) than private institutions scores ($n=194$). Public institutions scored higher on the Kaplan Pharmacology Integrated Exam than private institutions, $M= -.0254$, 95% CI $[-.042$ to $-.008]$, $t(471)= -3.022$, $p= .003$, $d= .39$ (Table 4). There was a statistically significant difference between means ($p<.05$), and therefore the researcher rejected the null hypotheses and accepted the alternative hypotheses. H_A : Differences existed in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$). A visual representation is presented with a bar chart (Figure 7).

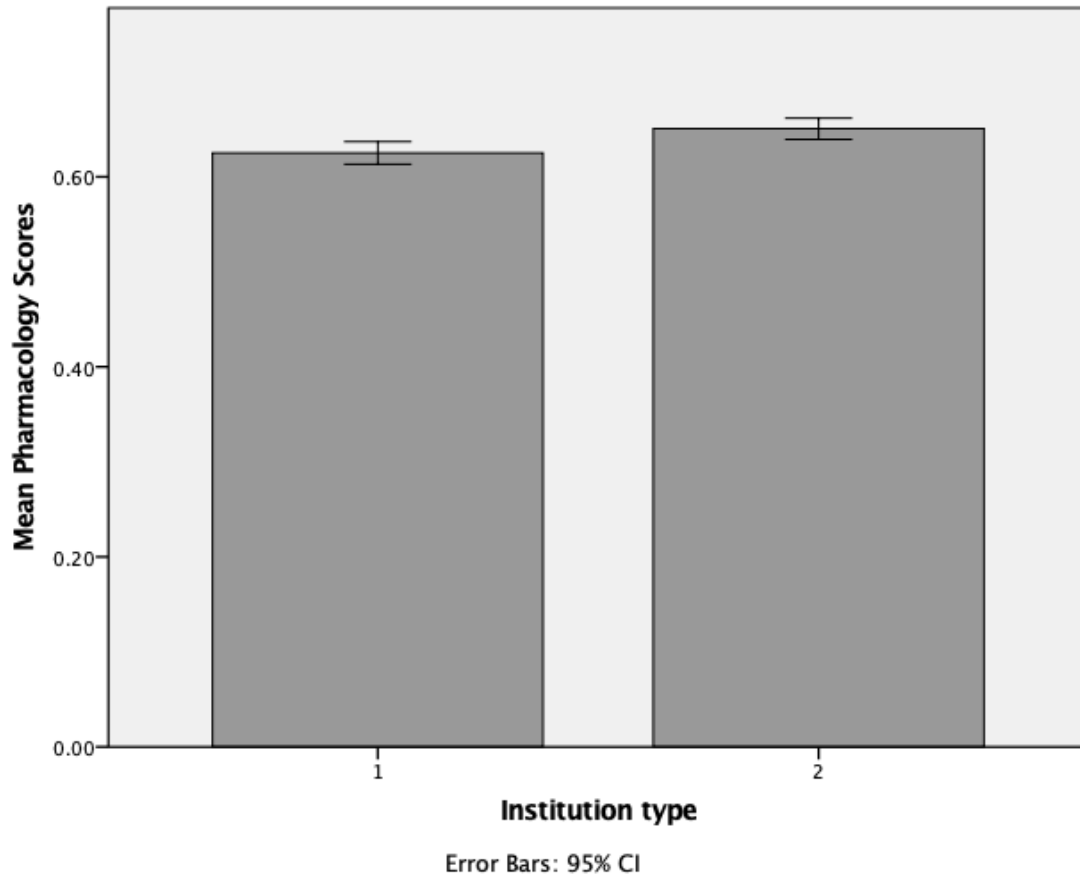


Figure 7: Bar Chart comparing mean Pharmacology Scores of Private vs Public Institutions

Question 2: Is there a significant difference in Kaplan Integrated Management of Care exam scores based on public versus private institution enrollment?

H_0 : No differences exist in the Kaplan Integrated Management of Care exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$).

H_A : Differences exist in the Kaplan Integrated Management of Care exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$).

H_0 : $\mu_{\text{private}} = \mu_{\text{public}}$

H_A : $\mu_{\text{private}} \neq \mu_{\text{public}}$

There were outliers in the data, as assessed by the boxplot (Figure 8). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

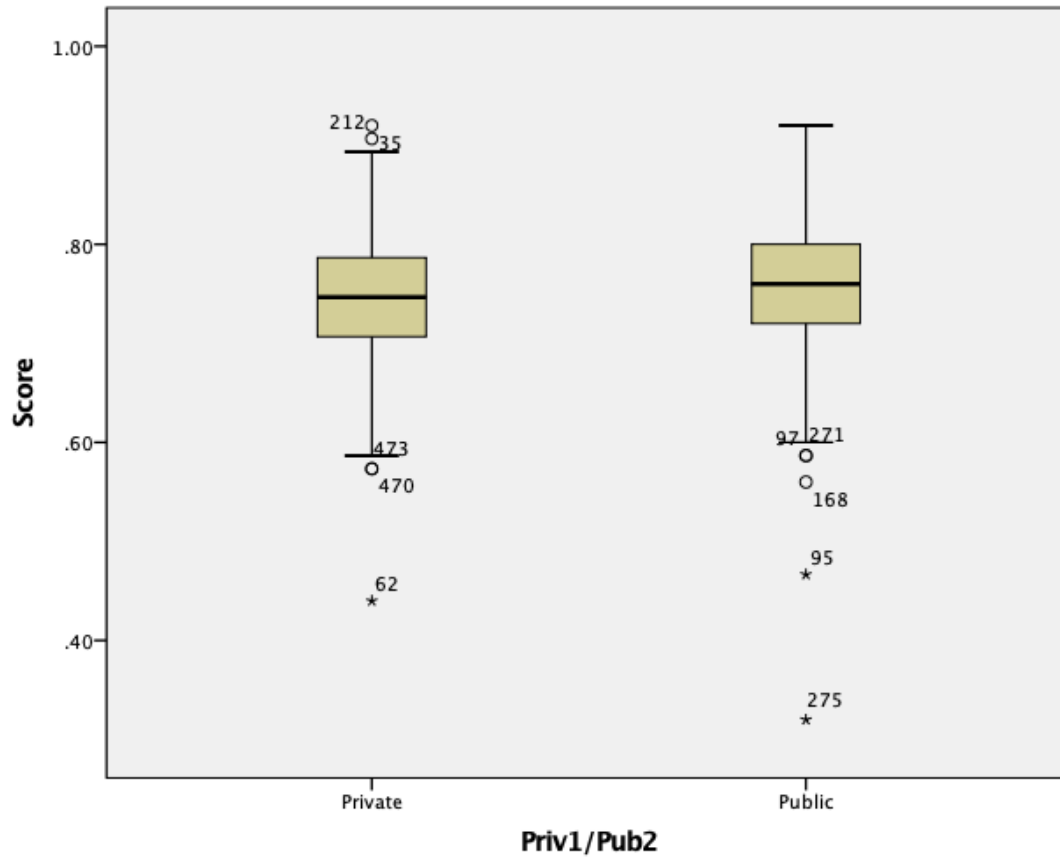


Figure 8: Outliers: Management of Care Private vs. Public Institutions

Table 5: Outliers Scores Identified: Management of Care Private vs. Public

Private		Public	
Identifier	Score	Identifier	Score
212	.91	271	.59
35	.92	97	.59
473	.57	168	.56
470	.57	95	.72
62	.44	275	.32

The recommended scores for a Kaplan exam are 70%. Reviewing the scores for the outliers (Table 5), the scores could be considered unusual data points. The outliers were removed and the descriptive test was run again to determine if outliers still existed.

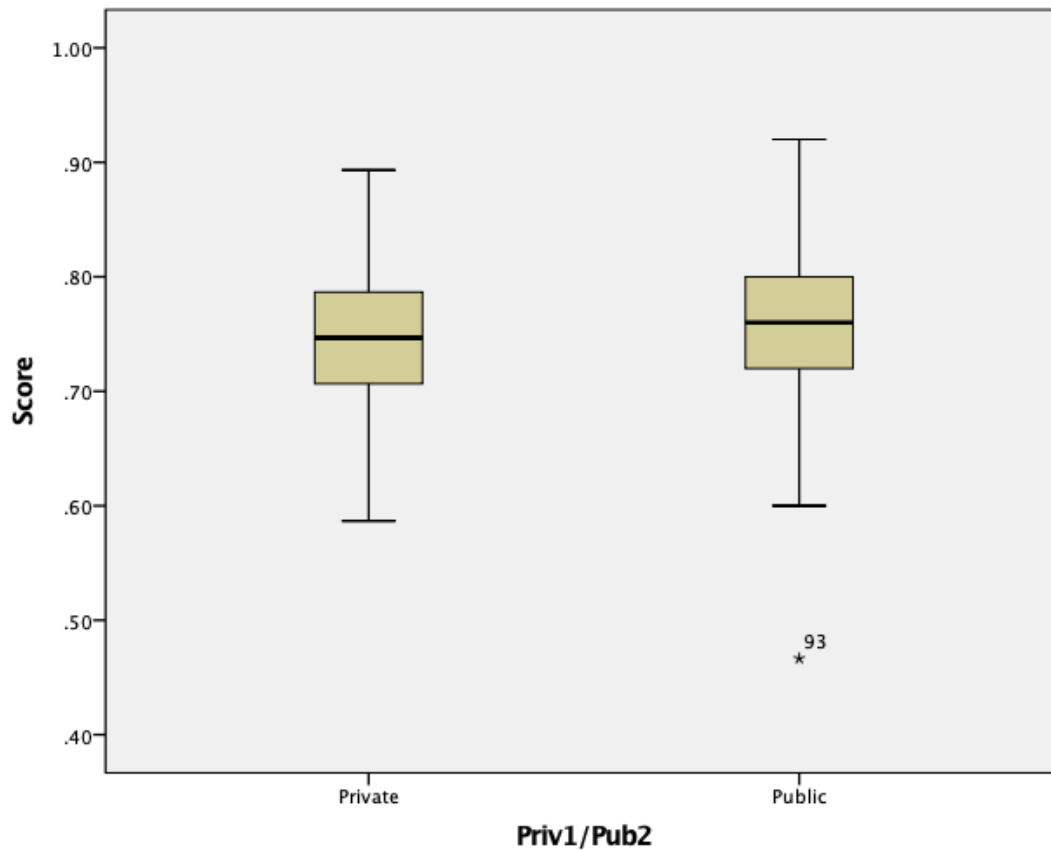


Figure 9: Outliers: Management of Care Private vs. Public Second Run

Table 6: Outliers Scores Identified: Management of Care Private vs. Public Second Run

Private		Public	
Identifier	Score	Identifier	Score
		93	.47

The following outlier scores (Figure 9) were identified and determined to be unusual data points in relation to the recommended 70% Kaplan score. The outliers (Table 6) were removed from the data so the scores would be normally distributed.

Management of Care scores were normally distributed for private institutions with a skewness of .060 (standard error= .170) and kurtosis of -3.01 (standard errors= .338) and for public institutions with a skewness of -.196 (standard error .149) and kurtosis of -.270 (standard error= .296).

Management of Care scores was approximately normally distributed for both private and public institutions, as assed by visual inspection of their histograms (Figure 10 & 11).

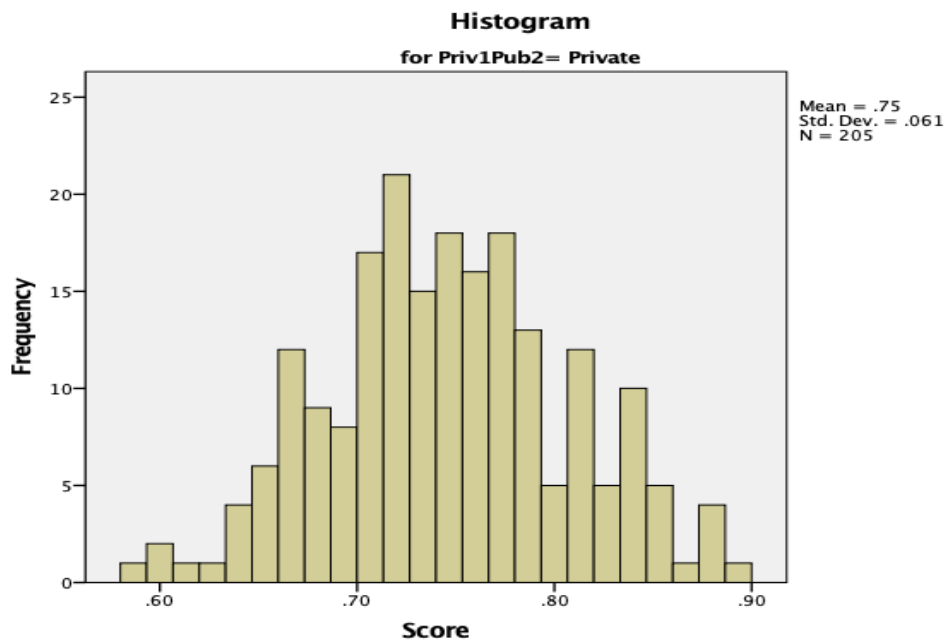


Figure 10: Histogram-Management of Care Private Institutions

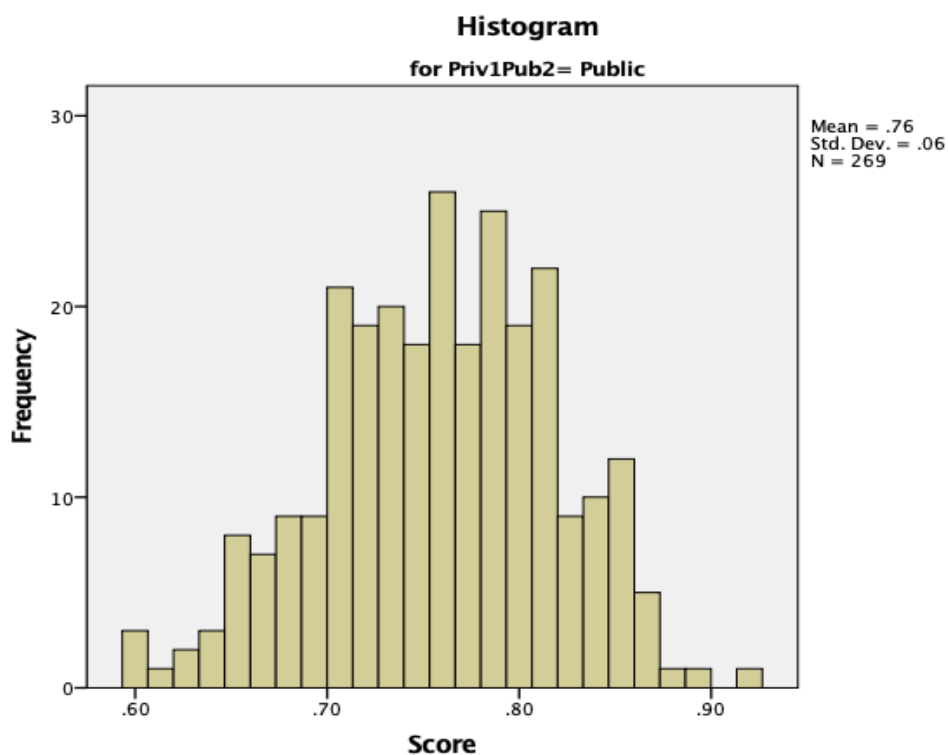


Figure 11: Histogram- Management of Care Public Institutions

Table 7: Group Statistics: Management of Care Private vs. Public

	Priv1/Pub2	N	Mean	Std. Deviation	Std. Error Mean
Score	Private	205	.7458	.06143	.00429
	Public	269	.7584	.06018	.00367

There were 205 private institution scores and 269 public institution scores. The management of care scores is higher for public institution ($M = .7584$, $SD = .060$) than private institutions ($M = .7458$, $SD = .061$) (Table 7).

Table 8: Independent Samples T-Test Management of Care Private vs. Public

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	.023	.880	-2.237	472	.026	-.0125	.0056	-.0236	-.0015
	Equal variances not assumed			-2.231	434.59	.026	-.01259	.0056	-.0236	-.0015

There was homogeneity of variance for management of care scores for private and public institutions, as assessed by Levene's test of quality variance ($p=.880$) (Table 8).

There was a statistically significant difference in mean management of care scores between private and public institutions. This should be interpreted with caution, as there were considerably more public institutions ($n=269$) than private institutions ($n=205$). Public institutions scored higher on the Kaplan management of care Integrated Exam than private institutions, $M=-.0126$, 95% CI $[-.023$ to $-.002]$ $t(472)=-2.23$, $p=.026$, $d=0.65$ (Table 8).

There was a statistically significant difference between means ($p,.05$) and therefore the researcher rejected the null hypotheses and accepted the alternative hypotheses. H_A : Differences

exist in the Kaplan Integrated Management of Care Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$). A visual representation is presented with a bar chart (Figure 12).

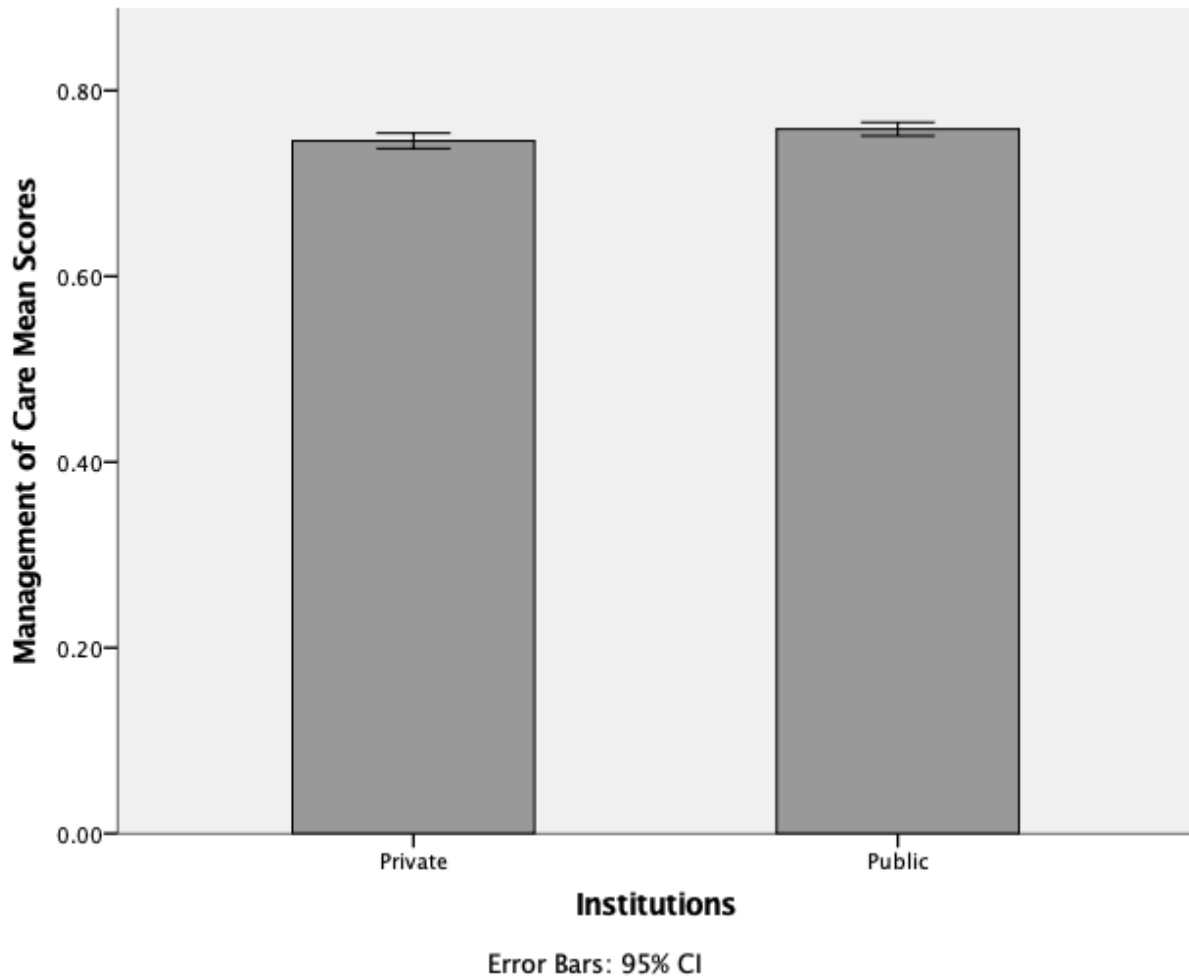


Figure 12: Bar Chart comparing mean Management of Care scores of Private vs. Public Institutions

Question 3: Is there a significant difference in Kaplan Integrated Medical Surgical Exam Scores based on public versus private institution enrollment?

H_0 : No differences exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$)

H_A : Differences exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$)

H_0 : $\mu_{\text{private}} = \mu_{\text{public}}$

H_A : $\mu_{\text{private}} \neq \mu_{\text{public}}$

There were outliers in the data, as assessed by the boxplot (Figure 13). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

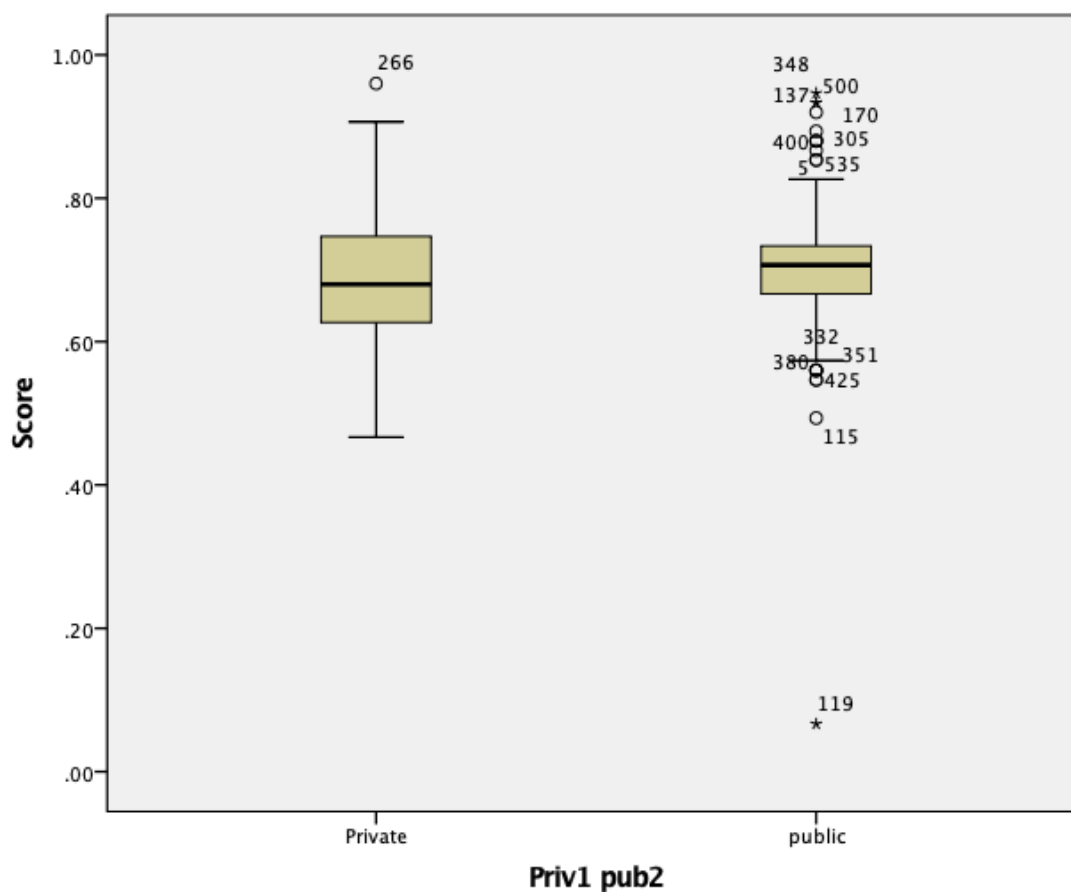


Figure 13: Outliers: Medical Surgical Private vs. Public Institutions

Table 9: Outlier Scores Identified: Medical Surgical Private vs. Public

Private		Public	
Identifier	Score	Identifier	Score
266	.96	115	.49
		119	.07
		425	.55
		351	.56
		380	.55
		332	.56
		348	.95
		500	.93
		137	.92
		170	.93
		305	.85
		400	.85
		535	.88
		5	.87

The recommended scores for a Kaplan exam are 70%. Reviewing the scores for the outliers (Table 9), the scores could be considered unusual data points. The outliers were removed and the descriptive test was run again to determine if outliers still existed (Figure 14)

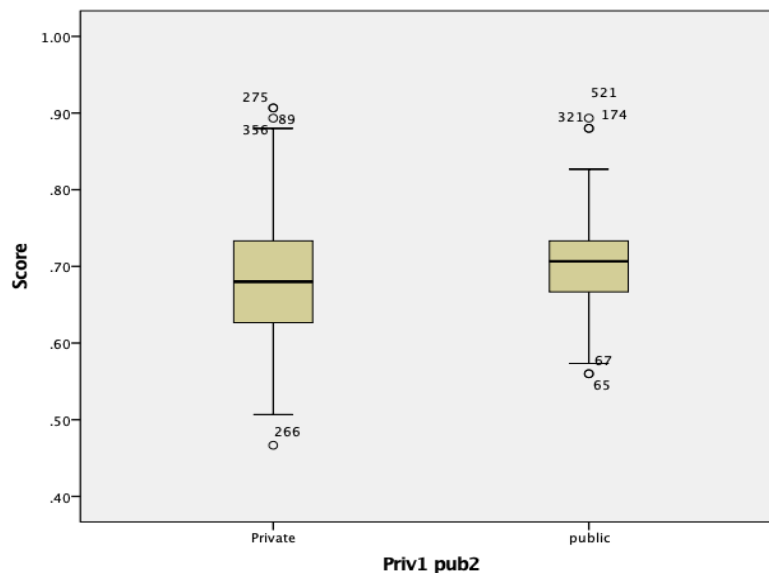


Figure 14: Outliers: Medical Surgical Private vs. Public Second Run

Table 10: Outlier Scores Identified: Medical Surgical Private vs. Public

Private		Public	
Identifier	Score	Identifier	Score
275	.91	521	.89
89	.91	174	.88
356	.89	321	.88
266	.47	67	.56
		65	.56

The following outlier scores were identified and determined to be unusual data points in relation to the recommended 70% Kaplan score. The outliers (Table 10) were removed from the data so the scores would be normally distributed.

Medical surgical scores were normally distributed for private institutions with a skewness of .168 (standard error = .168) and kurtosis of -.335 (standard error = .335) and for public institutions with a skewness of .041 (standard error = .138) and kurtosis of -.450 (standard error .276).

Medical surgical scores were normally distributed for both private and public institutions as assessed by visual inspection of their histograms (Figure 15 & 16).

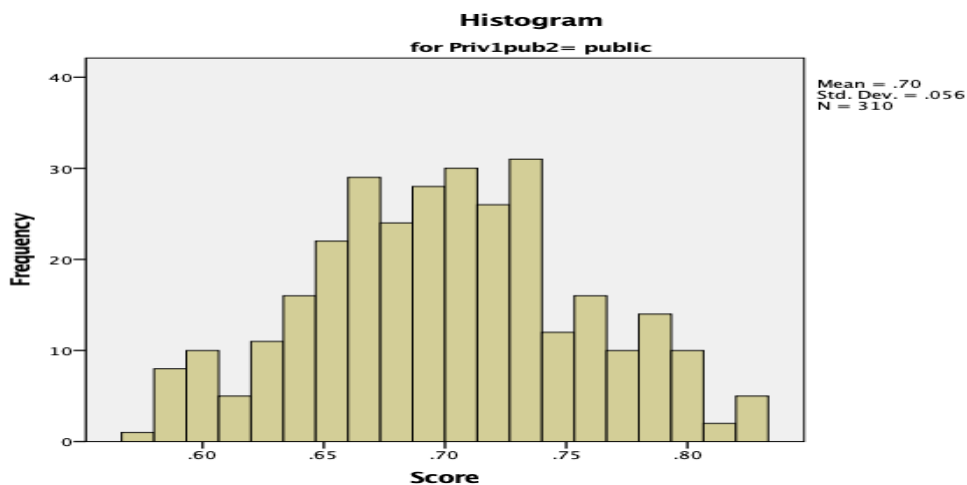


Figure 15: Histogram-Medical Surgical Public Institutions

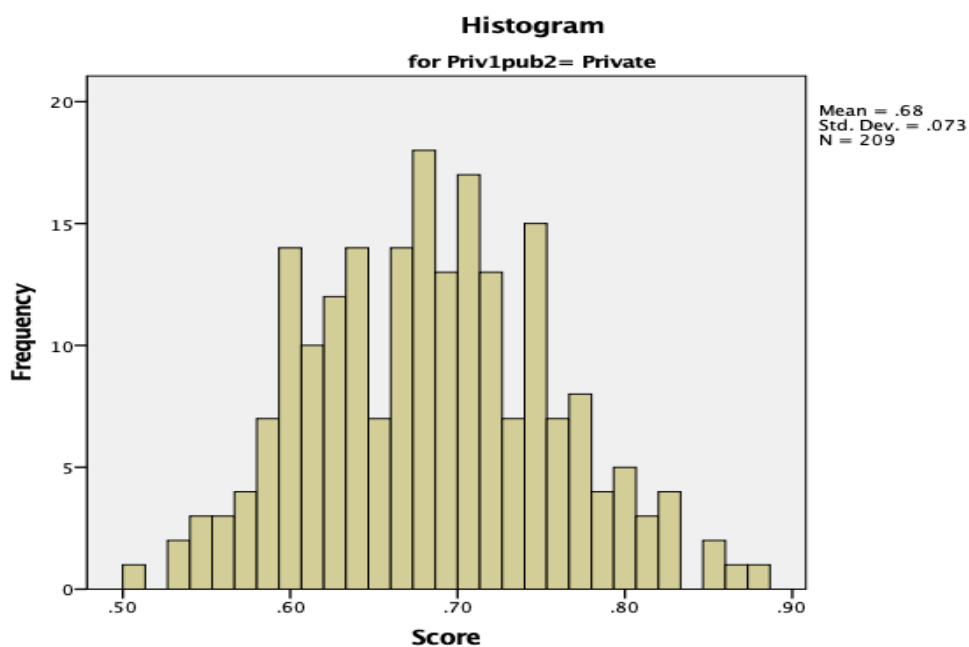


Figure 16: Histogram- Medical Surgical Private Institutions

Table 11: Group Statistics: Medical Surgical Private vs. Public

	Priv1 pub2	N	Mean	Std. Deviation	Std. Error Mean
Score	Private	209	.6843	.07267	.00503
	public	310	.7006	.05570	.00316

There were 209 private student scores and 310 public student scores. The public institutions scores are higher for public institutions ($M = .7006$, $SD = .0557$) than private institutions ($M = .6843$, $SD = .0726$) (Table 11).

Table 12: Independent Samples T-Test Medical Surgical Private vs. Public

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	17.111	.000	-2.881	517	.004	-.0162	.0056	-.0273	-.0051
	Equal variances not assumed			-2.738	366.70	.006	-.01626	.00594	-.0279	-.00459

The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances ($p = .000$) (Table 12).

There was a statistically significant difference in mean medical surgical scores between private and public institutions. This should be interpreted with caution, as there were considerably more public institutions ($n=310$) than private institutions ($n=209$). Public institutions scored higher on the Kaplan Medical Surgical Integrated Exam than private institutions, $M=-.01626$, 95% CI $[-.028$ to $-.004]$, $t(366) = -2.738$, $p=.006$, $d=.61$ (Table 12).

There was a statistically significant difference between means ($p<.05$), and therefore the researcher rejected the null hypotheses and accepted the alternative hypotheses. H_A : Differences exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$). A visual representation is presented with a bar chart (Figure 17).

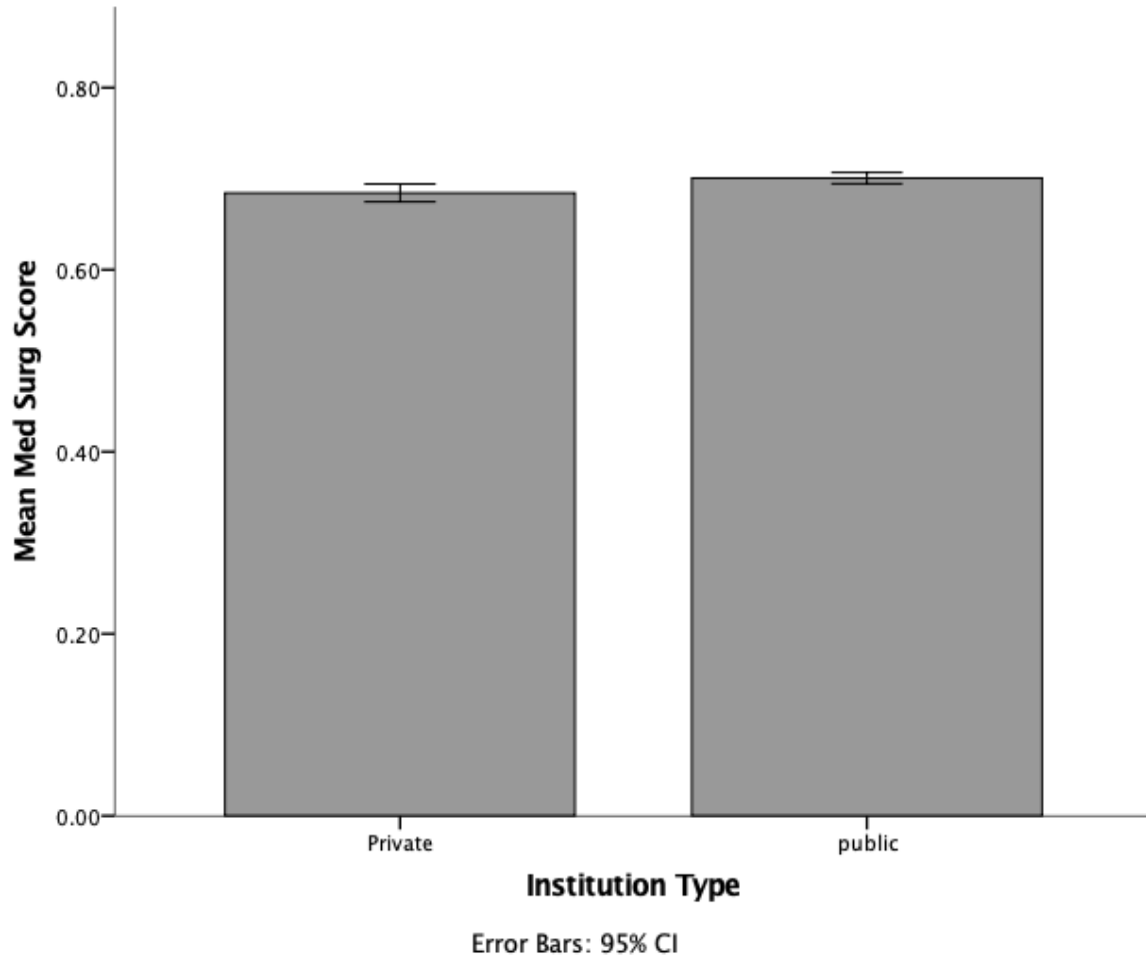


Figure 17: Bar Chart comparing mean Medical Surgical scores of Private vs. Public Institutions

Question 4: Is there a significant difference in Kaplan Integrated Pharmacology Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?

H_0 : No differences exist in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$)

H_A : Differences exist in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$)

H_0 : $\mu_{ADN} = \mu_{BSN}$

H_A : $\mu_{ADN} \neq \mu_{BSN}$

There were outliers in the data, as assessed by the boxplot (Figure 18). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

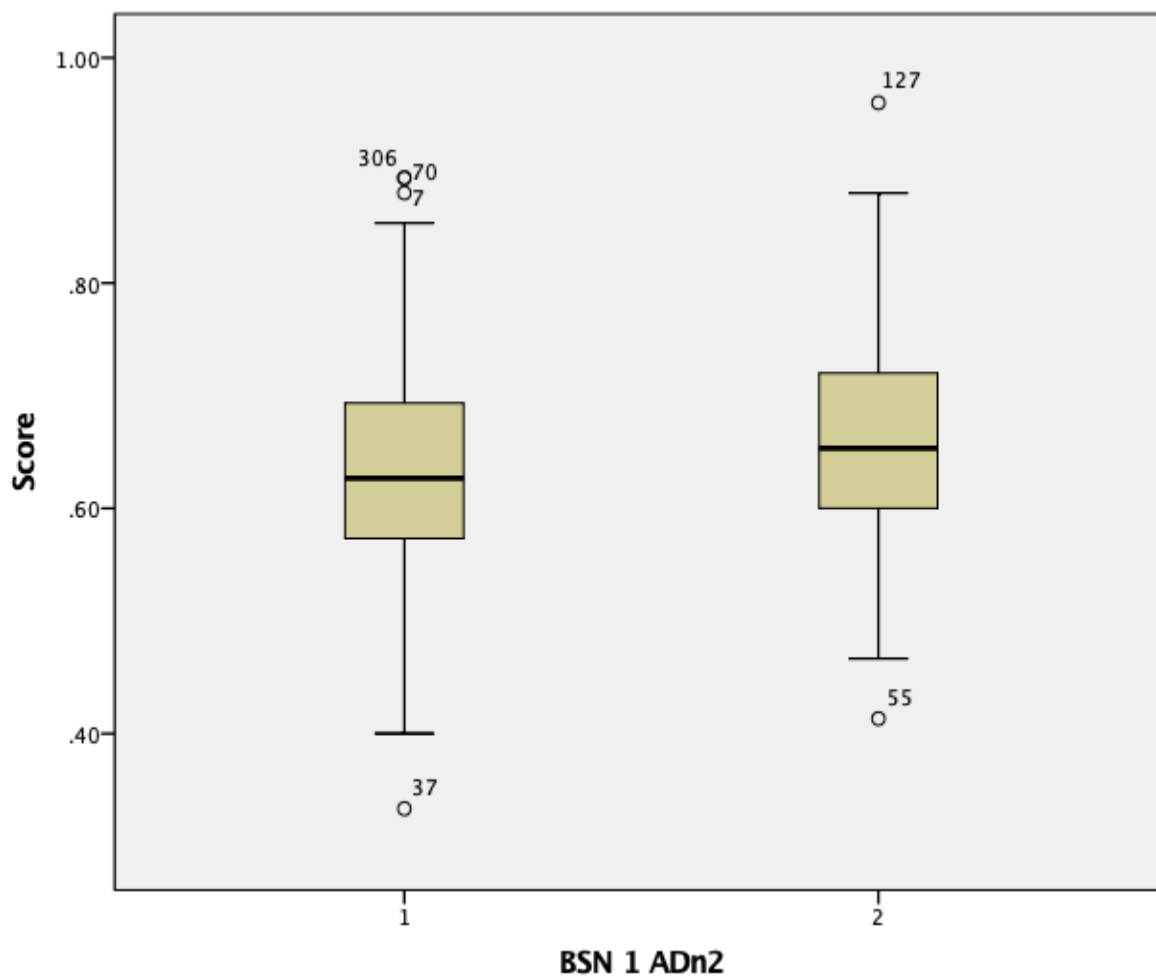


Figure 18: Outliers: Pharmacology BSN vs. ADN

Table 13: Outlier Scores Identified: Pharmacology BSN vs. ADN

ADN		BSN	
Identifier	Score	Identifier	Score
127	.96	306	.89
55	.41	70	.88
		7	.89
		37	.33

The following outlier scores (Table 13) were identified and determined to be unusual data points in relation to the recommended 70% Kaplan score. The outliers were removed from the data so the scores would be normally distributed.

Pharmacology scores were normally distributed for BSN institutions with a skewness of .036 (standard error= .139) and kurtosis of -.179 (standard error = .278) and for ADN institutions with a skewness of -.012 (standard error = .187) and kurtosis of -.589 (standard error = .371).

Pharmacology scores were approximately normally distributed for both private and public institutions, as assessed by visual inspection of their histograms (Figure 19 & 20).

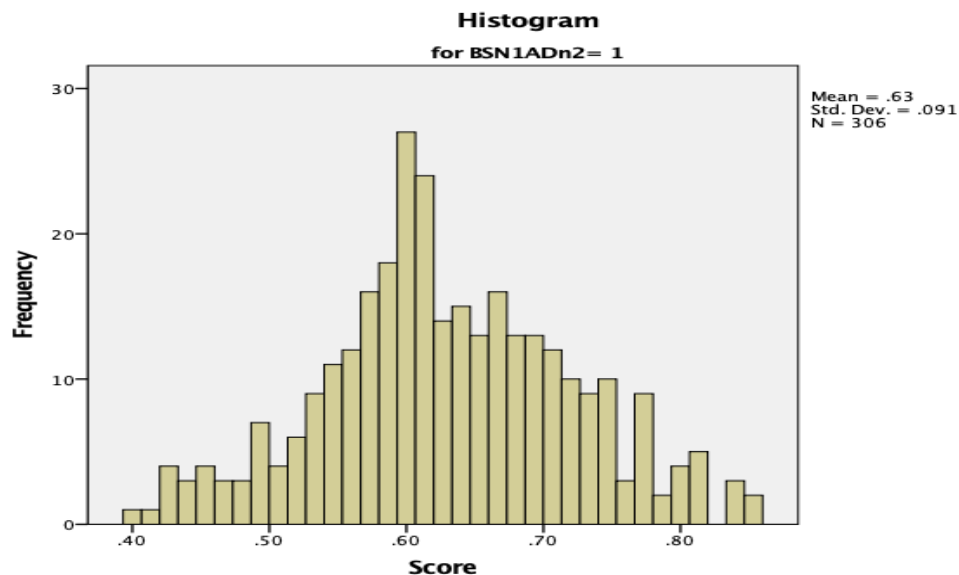


Figure 19: Histogram-Pharmacology BSN Institutions

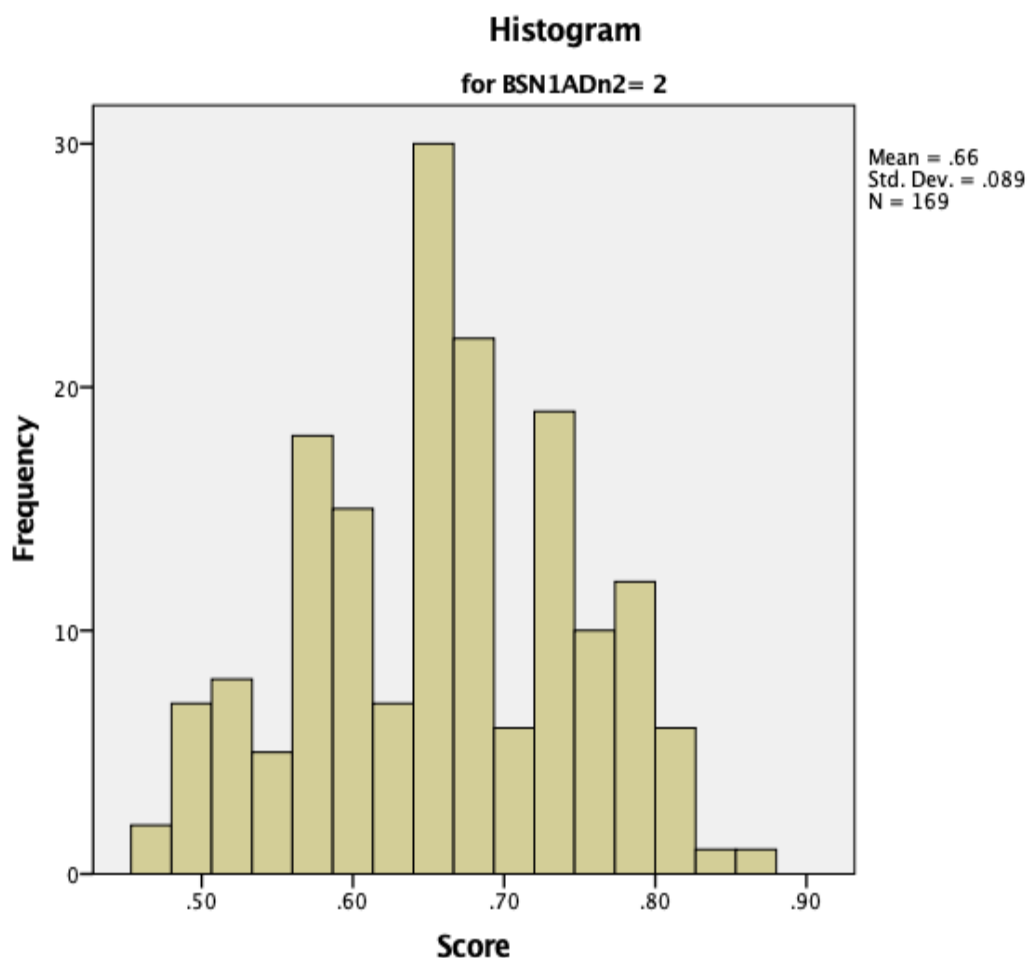


Figure 20: Histogram ADN Institutions

Table 14: Group Statistics: Pharmacology BSN vs. ADN

	BSN 1 ADn2	N	Mean	Std. Deviation	Std. Error Mean
Score	1	306	.6298	.09134	.00522
	2	169	.6615	.08912	.00686

There were 306 BSN institutions scores and 169 ADN institution scores. The pharmacology scores were higher for ADN institutions ($M = .6615$, $SD = .089$) than BSN institutions ($M = .6298$, $SD = .091$) (Table 14).

Table 15: Independent Samples T-Test Pharmacology BSN vs. ADN

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differenc e	Std. Error Differen ce	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	.002	.967	-3.647	473	.000	-.0316	.0086	-.0487	-.0146
	Equal variances not assumed			-3.673	353.85	.000	-.0316	.0086	-.0486	-.0147

There was homogeneity of variance for pharmacology scores for BSN and ADN institutions, as assessed by Levene's test for quality of variance ($p = .967$) (Table 15).

There was a statistically significant difference in mean pharmacology scores between ADN and BSN institutions. This should be interpreted with caution, as there were considerably more BSN institutions ($n = 306$) than ADN institutions ($n = 169$). ADN institutions scored higher on the Kaplan Pharmacology Integrated Exam than BSN institutions, $M = -.0316$, 95% CI $[-.048 \text{ to } -.015]$ $t(473) = -3.647$, $p = 0.000$, $d = -3.5$ (Table 15).

There was a statistically significant difference between means ($p < .05$), and therefore we can reject the null hypotheses and accept the alternative hypotheses. H_A : Differences exist in the Kaplan Integrated Pharmacology Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$). A visual representation is presented with a bar chart (Figure 21).

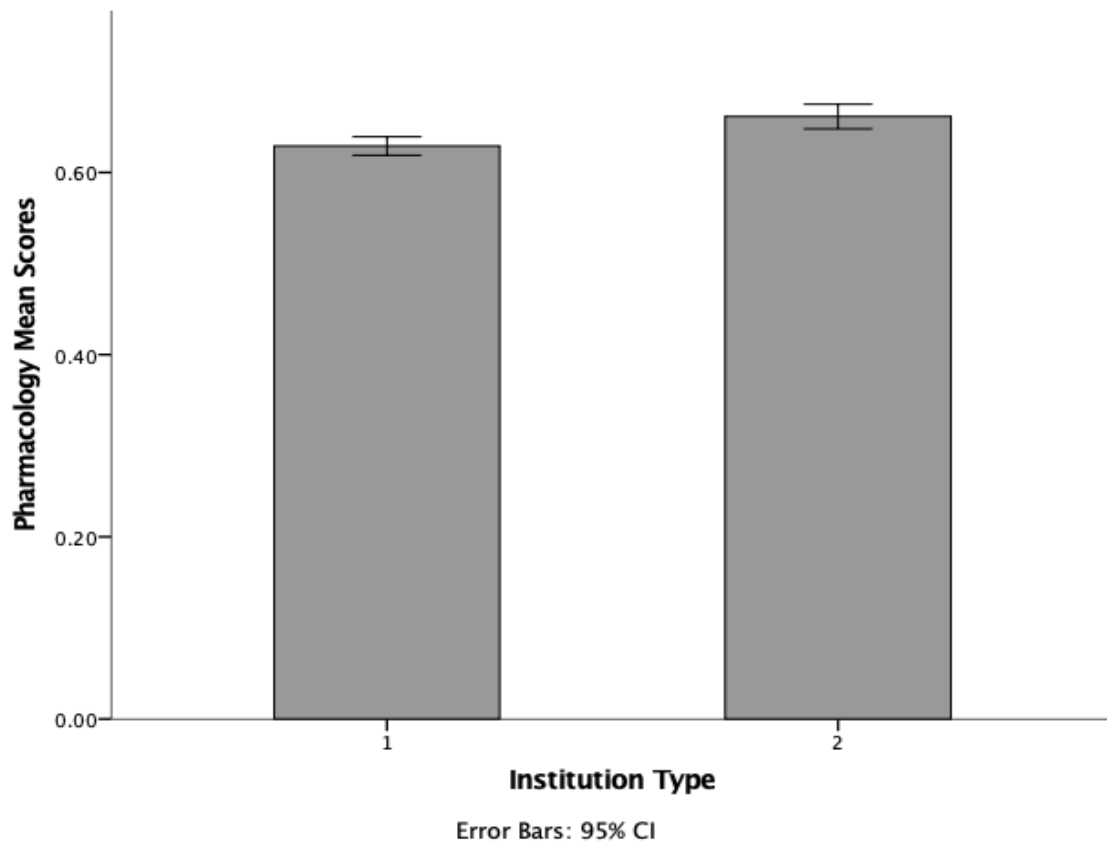


Figure 21: Bar Chart comparing mean Pharmacology scores of BSN vs. ADN Institutions

Question 5: Is there a significant difference in Kaplan Integrated Management of Care Exam scores based on Associates versus Baccalaureate Degree enrollment?

H_0 : No differences exist in the Kaplan Integrated Management of Care Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$)

H_A : Differences exist in the Kaplan Integrated Management of Care Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$)

$H_0: \mu_{ADN} = \mu_{BSN}$

$H_A: \mu_{ADN} \neq \mu_{BSN}$

There were outliers in the data, as assessed by the boxplot (Figure 22). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were

found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

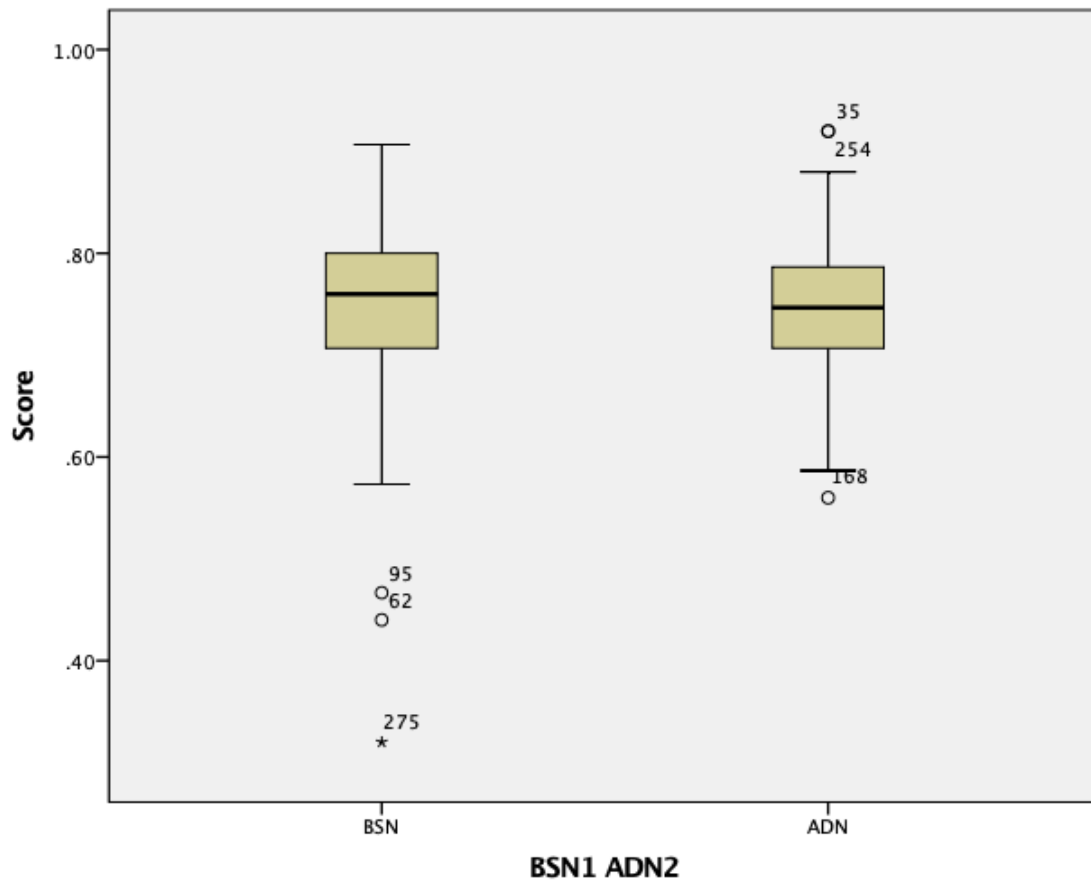


Figure 22: Outliers: Management of Care BSN vs. ADN Institutions

Table 16: Outlier Scores Identified: Management of Care BSN vs. ADN

ADN		BSN	
Identifier	Score	Identifier	Score
95	.72	35	.92
62	.44	254	.92
275	.32	168	.56

The following outlier scores (Table 16) were identified and determined to be unusual data points in relation to the recommended 70% Kaplan score. The outliers were removed from the data so the scores would be normally distributed.

Management of Care scores was normally distributed for BSN scores with a skewness of -.209 (standard error= .132) and kurtosis of -.200 (standard error= .264) and for ADN scores with a skewness of -.184 (standard error= .205), and kurtosis of -.117 (standard error= .407).

Management of Care scores were approximately normally distributed for both BSN and ADN institutions, as assessed by visual inspection of their histograms (Figures 23 & 24).

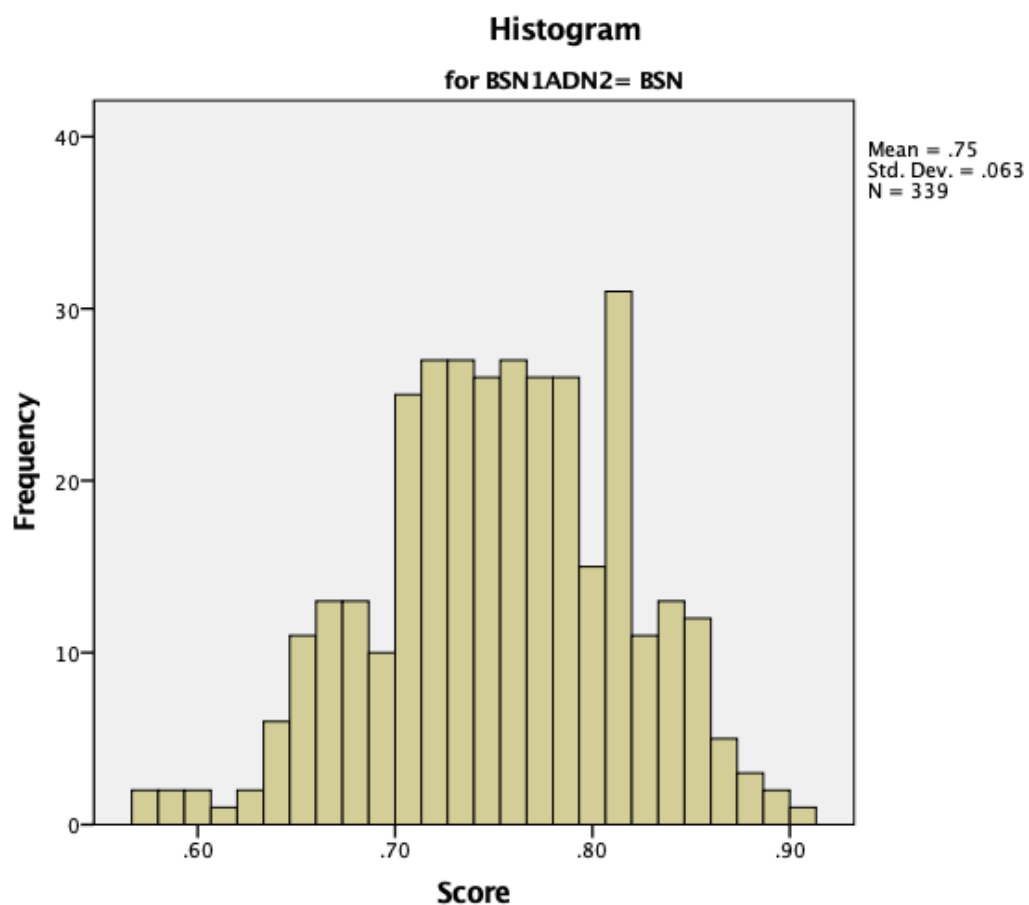


Figure 23: Histogram- Management of Care BSN Institutions

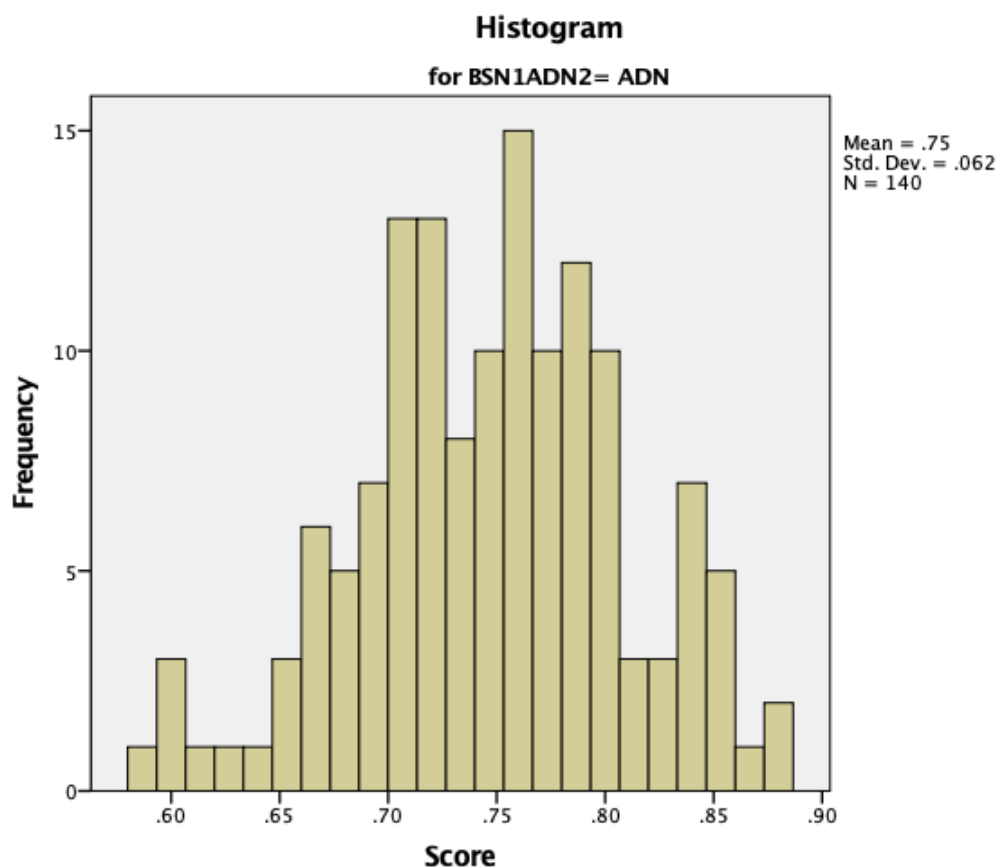


Figure 24: Histogram-Management of Care ADN Institutions

Table 17: Group Statistics: Management of Care BSN vs. ADN

	BSN1 ADN2	N	Mean	Std. Deviation	Std. Error Mean
Score	BSN	339	.7534	.06303	.00342
	ADN	140	.7473	.06172	.00522

There were 339 BSN institutional scores and 140 ADN institutional scores. The BSN scores are higher ($M = .7534$, $SD = .06303$) than the ADN ($M = .7473$, $SD = .06172$) (Table 17).

Table 18: Independent Samples T-Test: Management of Care BSN vs. ADN

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	.208	.648	.956	477	.339	.0060	.0062	-.0063	.0183
	Equal variances not assumed			.965	264.335	.336	.0060	.0062	-.0062	.0183

There was homogeneity of variances for management of care scores for BSN and ADN institutions, as assessed by Levene's test of quality of variance ($p=.648$) (Table 18).

There was no statistical significant difference in mean management of care scores between ADN and BSN institutions, $p=.339$. This should be interpreted with caution, as there were considerably more BSN institutions ($n=339$) than ADN institutions ($n=140$) (Table 18).

Since there is no statistical difference between means ($p<.05$), the researcher accepted the null hypotheses and rejected the alternative hypotheses. H_0 : No differences exist in the Kaplan Integrated Management of Care Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$). A visual representation is presented with a bar chart (Figure 25).

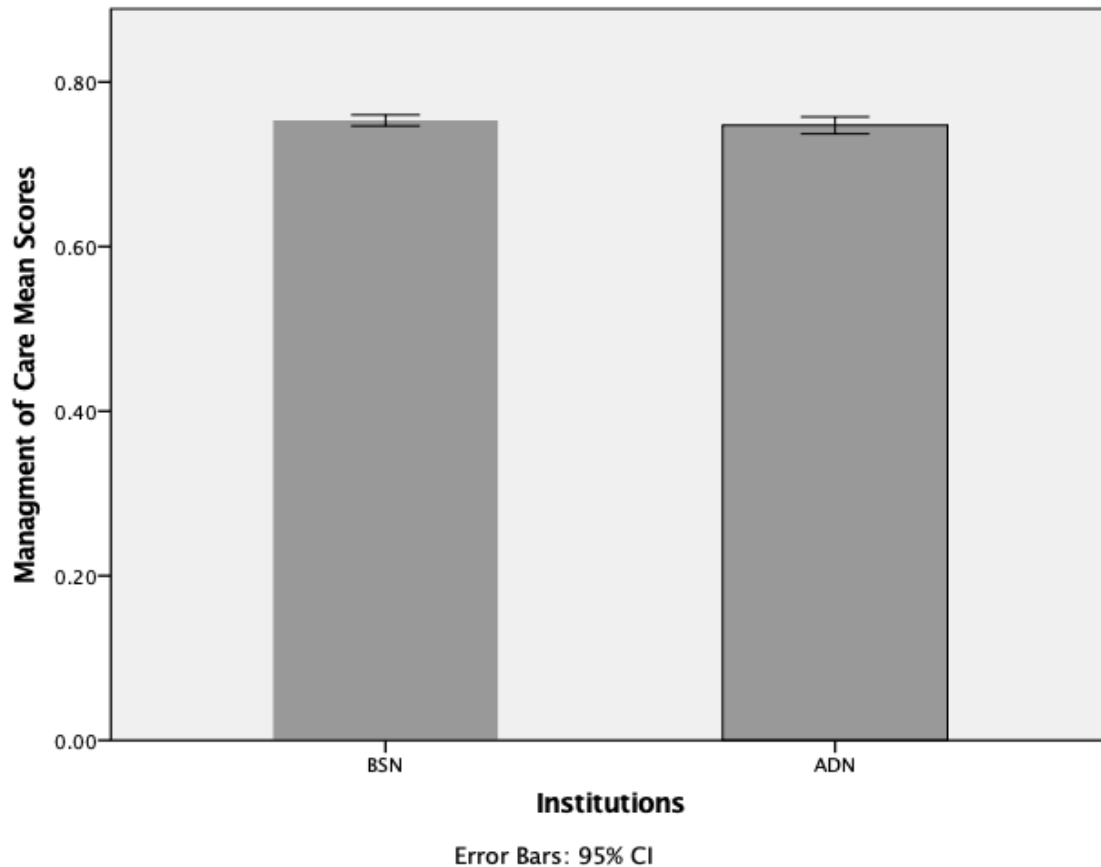


Figure 25: Bar Chart comparing mean Management of Care scores of BSN vs. ADN Institutions

Question 6: Is there a significant difference in Kaplan Integrated Medical Surgical Exam scores based on Associates Degree versus Baccalaureate Degree enrollment?

H_0 : No differences exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 = \mu_2$)

H_A : Differences exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$)

H_0 : $\mu_{ADN} = \mu_{BSN}$

H_A : $\mu_{ADN} \neq \mu_{BSN}$

There were outliers in the data, as assessed by the boxplot (Figure 26). After assessing the outliers, the first consideration was checking for data entry errors. No data entry errors were found. The second consideration was to determine if there was a measurement error. There were no measurement errors in the data. The last consideration as recommended by Laerd Statistics (2016) was to establish if an outlier is most likely a genuinely unusual data point.

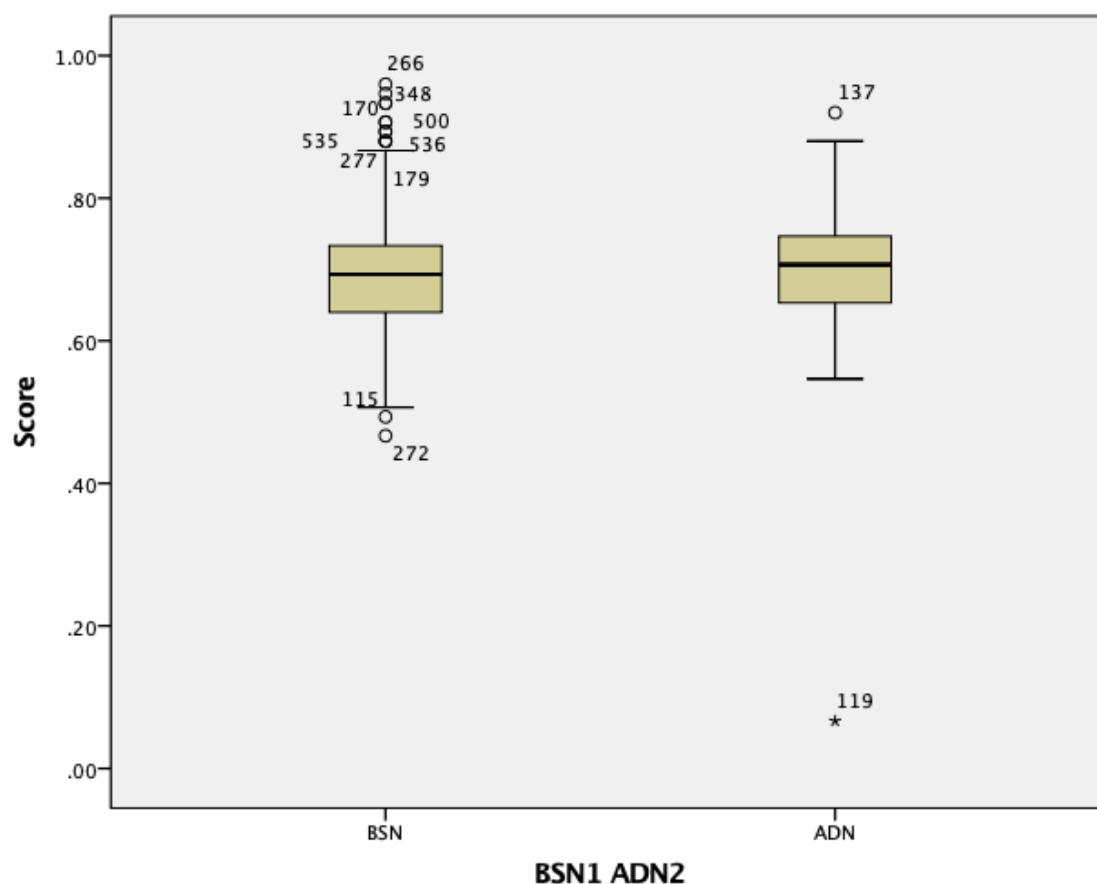


Figure 26: Outliers: Medical Surgical BSN vs. ADN Institutions

Table 19: Outlier Scores Identified: Medical Surgical BSN vs. ADN

ADN		BSN	
Identifier	Score	Identifier	Score
119	.07	115	.49
137	.92	272	.47
		179	.88
		277	.88
		535	.88
		536	.89
		500	.93
		170	.93
		348	.95
		266	.96

The recommended scores for a Kaplan exam are 70%. Reviewing the scores for the outliers (Table 19), the scores could be considered unusual data points. The outliers were removed and the descriptive test was run again to determine if outliers still existed.

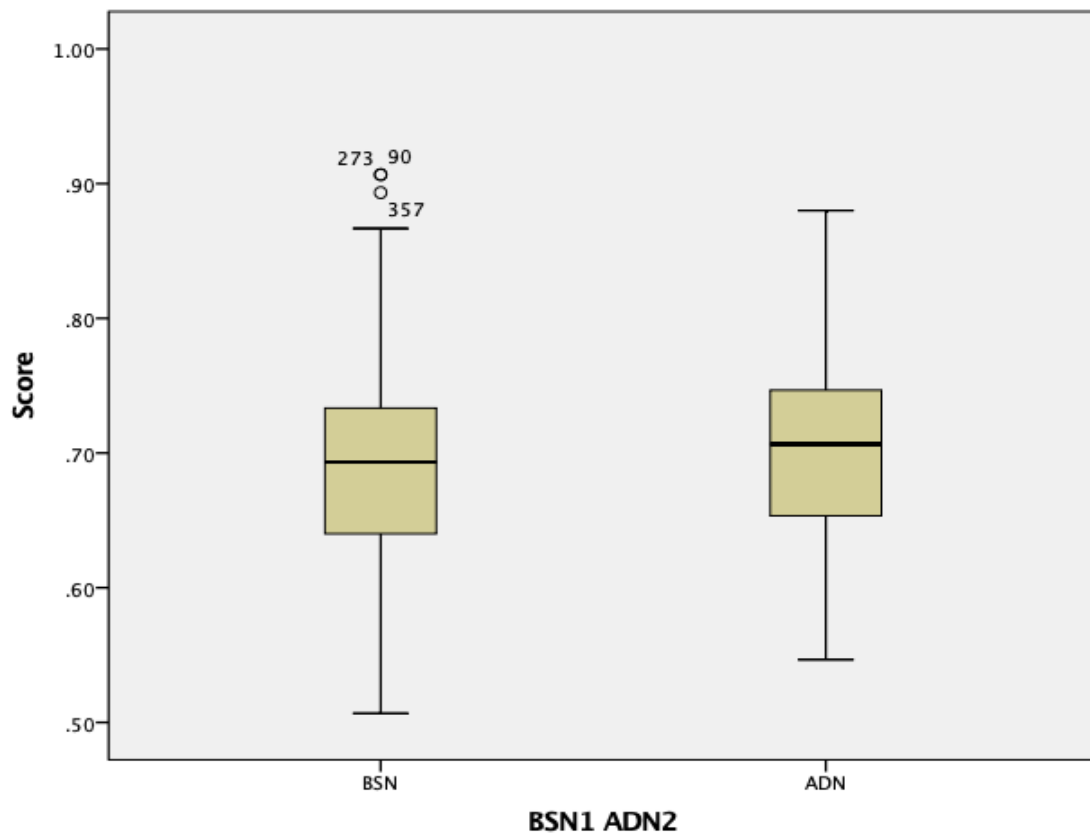


Figure 27: Outlier: Medical Surgical BSN vs. ADN Second Run

Table 20: Outlier Scores Identified: Medical Surgical BSN vs. ADN Second Run

ADN		BSN	
Identifier	Score	Identifier	Score
		273	.91
		90	.91
		357	.89

The following outlier scores (Figure 27) were identified and determined to be unusual data points in relation to the recommended 70% Kaplan scores. The outliers (Table 20) were removed from the data so the scores would be normally distributed.

Medical Surgical scores were normally distributed for BSN scores with a skewness of .071 (standard error = .126) and kurtosis of -.113 (standard error = .251) and for ADN scores with a skewness of -.081 (standard error = .197) and kurtosis of -.294 (standard error of .392).

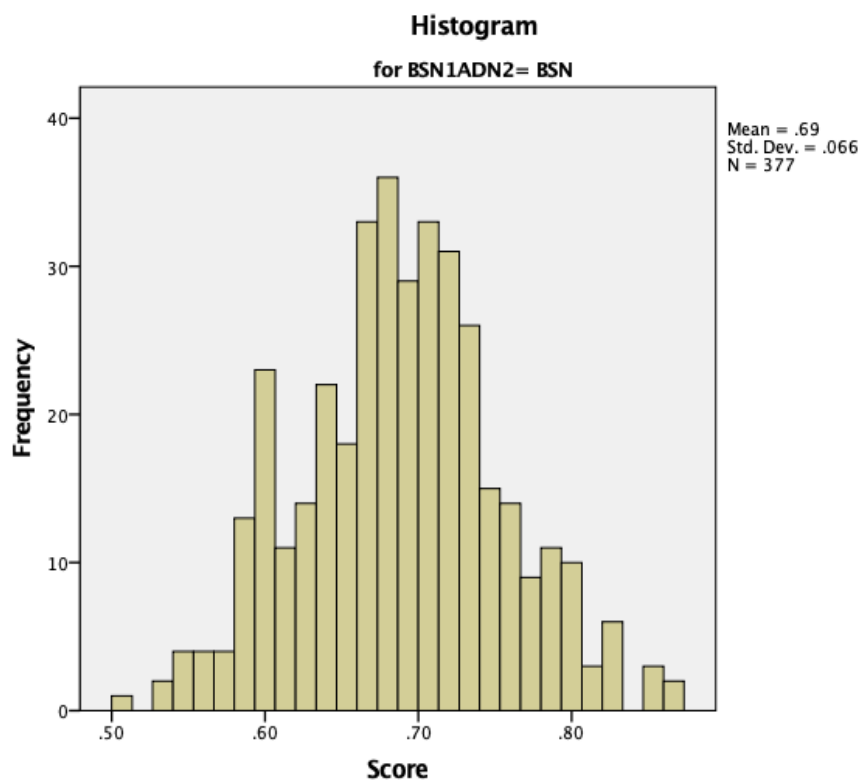


Figure 28: Histogram-Medical Surgical BSN Institutions

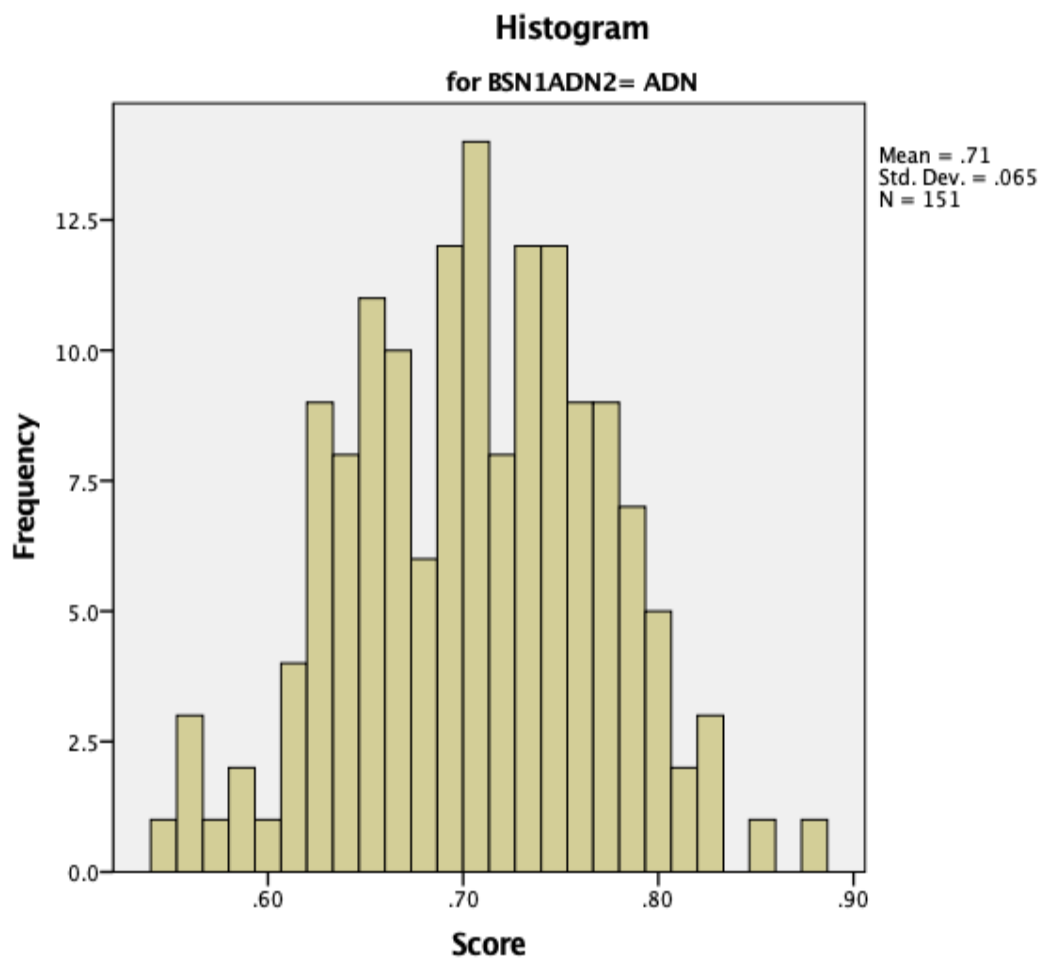


Figure 29: Histogram- Medical Surgical ADN Institutions

Med Surg scores were approximately normally distributed for both BSN and ADN, as assessed by visual inspection of their histograms (Figures 28 & 29).

Table 21: Group Statistics: Medical Surgical BSN vs. ADN

	BSN1 ADN2	N	Mean	Std. Deviation	Std. Error Mean
Score	BSN	377	.6884	.06568	.00338
	ADN	151	.7060	.06482	.00528

There were 377 BSN students and 151 ADN students. The med surg scores are higher for ADN institutions ($M = .71$, $SD = 0.065$) than BSN institutions ($M = .69$, $SD = 0.066$) (Table 21).

Table 22: Independent Samples T-Test Medical Surgical BSN vs. ADN Institutions

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed) ^a	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	.023	.879	-2.789	526	.005	-.01758	.00630	-.02996	-.00520
	Equal variances not assumed			-2.805	279.84	.005	-.01758	.00627	-.02991	-.00524

There was homogeneity of variances for med surg scores for ADN and BSN, as assessed by Levene's test of quality of variance ($p = .879$) (Table 22).

There was a statistically significant difference in mean medical surgical scores between ADN and BSN institutions. This should be interpreted with caution, as there were considerably more BSN institutions ($n = 377$) than ADN institutions ($n = 151$). ADN institutions scored higher on the Kaplan medical surgical Integrated Exam than BSN institutions, $M = -.0175$, 95% CI [-0.029 to -.005], $t(526) = -2.789$, $p = .005$, $d = -.02$ (Table 22).

There was a statistically significant difference between means ($p < .05$), and therefore the researcher rejected the null hypotheses and accepted the alternative hypotheses. H_A : Differences

exist in the Kaplan Integrated Medical Surgical Exam scores between or among private and public institutions (i.e. $\mu_1 \neq \mu_2$). A visual representation is presented with a bar chart (Figure 30).

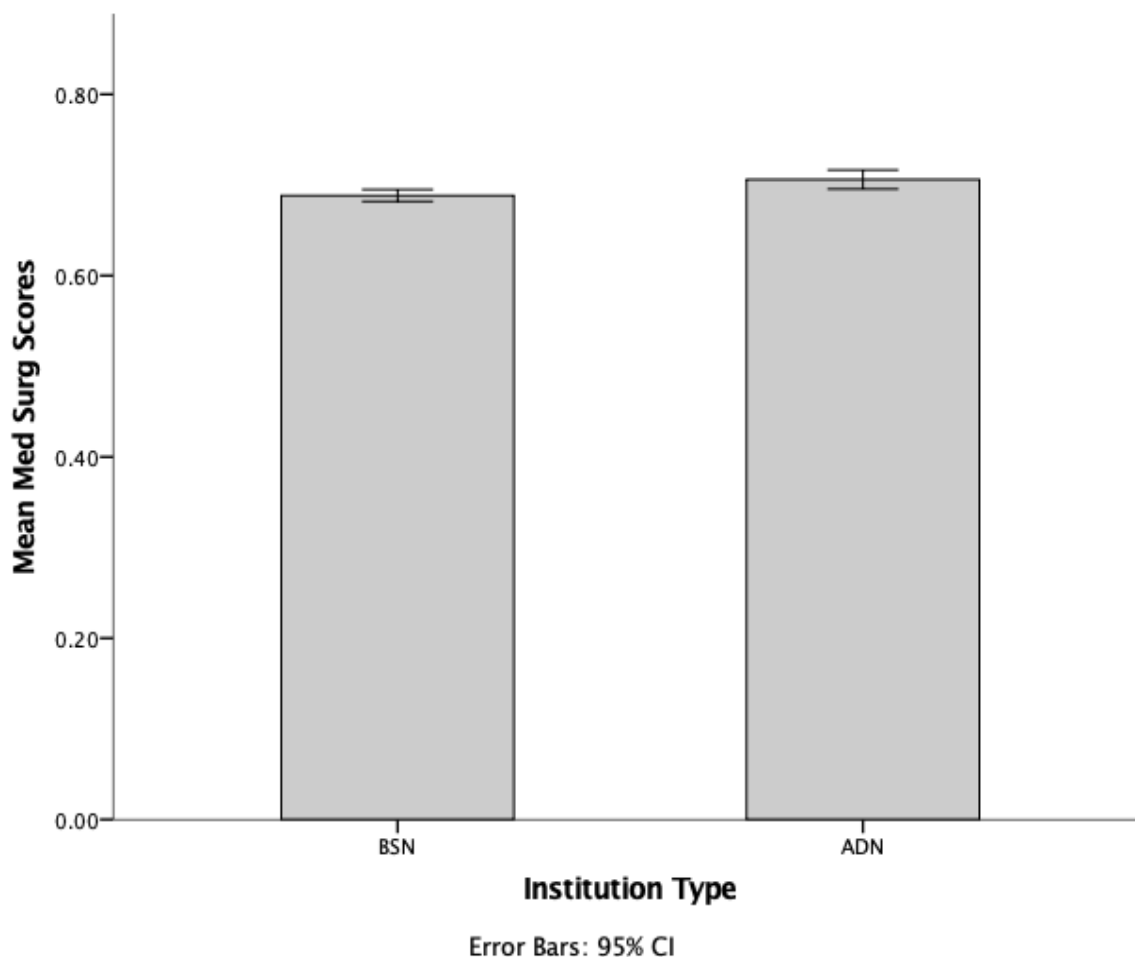


Figure 30: Bar Chart comparing mean Medical Surgical Scores of BSN vs. ADN Institutions

Summary

An independent-samples t-test was run to determine if there were differences in Pharmacology, Management of Care, and Medical Surgical Kaplan Integrated exam scores for private and public institutions and ADN and BSN institutions. Outliers in the data were removed because the scores were believed to be unusual data points. Exam Scores for institutions were

normally distributed as assessed by skewness, kurtosis, and histograms. Homogeneity of variance was assessed by Levene's test for equality of variances.

The results of the data analysis suggested public institutions score higher on Pharmacology, Management of Care, and Medical Surgical Kaplan Integrated Exams than private institutions. However, this data should be interpreted with caution since all the public institutions had more sample members than the private institutions. The data Pharmacology, Management of Care, and Medical Surgical analysis also suggests ADN programs score higher on the Pharmacology and Medical Surgical Kaplan Integrated Exam scores than the BSN programs. However, this data should be interpreted with caution since all the ADN programs had less sample members than the BSN programs. There was no significant difference in ADN or BSN program scores for the Management of Care Kaplan Integrated Exam Scores.

Chapter V

Conclusion

Summary of the Study

The purpose of this quantitative investigation was to determine whether a difference exists on the Kaplan Integrated Exams Scores (Pharmacology, Medical Surgical, and Management of Care) between or among private and public institutions and 2-year (Associate Degree) and 4-year (Baccalaureate Degree) institutions. The Management of Care score was chosen due to having the largest percentage of the NCLEX-RN test blueprint at 20%. Pharmacology has the second highest percentage at 15%. The Medical Surgical exam was chosen because previous literature has shown students with higher grades in Medical Surgical courses have a higher chance to pass the NCLEX-RN on the first write.

The United States has a massive nursing shortage problem, and the shortage is predicted to continue to grow. The Department of Labor Bureau: Labor of Statistics (2018) reports in 2016 there were 2.9 million Registered Nursing jobs with a projected growth of fifteen percent from 2016-2026. With the pressure of the nursing shortage, nursing programs face pressure to expedite entry of nurses into the workforce via first time success on the National Council Licensure Exam (NCLEX-RN). To increase the pressure further on faculty and administration, the National Council for State Boards of Nursing (NCSBN) increased the passing standard beginning in 2007 (Wendt & Kenny, 2007) with the passing standard being re-evaluated every three years. The next evaluation will be Spring 2019.

Several companies provide content mastery exams for nursing programs to purchase to enhance student success and progression through nursing school. Companies such as Pearson, Health Education Systems Incorporated (HESI), Kaplan, Assessment Technologies Institutes

(ATI), and Hurst provide content mastery exams that can aid in preparing nursing students for success on the NCLEX-RN (Hyland, 2012). Nursing school administrators and faculty are in search of which product will be the best aide in preparing students for the NCLEX-RN. Every program offers testing and remediation options with resources for both faculty and students.

The general problem is that nursing educators are unable to accurately predict who will succeed and who will fail the NCLEX- RN examination. Being unable to make accurate predictions, nursing faculty and administration cannot make needed curriculum improvements or changes to admission criteria toward increasing the ratio of successful outcomes as measured by the NCLEX-RN high stakes test. This study is vital to the field of nursing education because the goal of nursing program administrators and faculty is to graduate successful students on the NCLEX-RN first attempt to help with the nursing shortage. Indicating whether students' score higher on Kaplan Integrated Exams at public versus private, two years versus four years could indicate which programs are more successful at preparing students for the NCLEX-RN. This study could also help students chose programs for future study. Currently, no research has been conducted on the Kaplan Integrated Exams or comparing ADN to BSN program NCLEX-RN outcomes.

The original objective of this research was to determine if the three Kaplan Integrated Exam scores (Pharmacology, Management of Care, and Medical Surgical) had significant influence on the pass or fail of a nursing student's first attempt at the NCLEX-RN exam. After initial review of the data, out of the 926 respondents, only thirteen students self reported failure on the NCLEX-RN exam indicating if a nursing student completes the Kaplan Integrated Exams in a nursing curriculum the chances of passing the NCLEX-RN on the first attempt increase significantly. However, this cannot be proven at this point due to the lack of respondents that did

not self-report failure on the NCLEX-RN first attempt but had completed the Kaplan Integrated Exams.

In order to determine if a difference exists on the Kaplan Integrated Exams Scores (Pharmacology, Medical Surgical, and Management of Care) between or among private and public institutions and 2-year (Associate Degree) and 4-year (Baccalaureate Degree) institutions independent sample t-tests were completed on the data provided by Kaplan Inc. The data included the number of questions a nursing student answer correctly, the number of test questions, and a formula to determine the overall percentage test score. Students were divided into groups based on if they attended a private of public institutions and whether they attended an ADN or BSN nursing program. There were 481 Pharmacology exam scores, 467 Management of Care exam scores, and 549 Medical Surgical exam scores.

Conclusions

The following conclusions are presented for this research.

1. An independent samples t-test determined there were differences in Pharmacology Kaplan Integrated Exam scores between private and public institutions. Public institutions ($M=.6506$, $SD=.94$) scored higher than private institutions ($M=.625$, $SD=.84$), a statistically significant difference, $M=-.0254$, 95%CI $[-.42$ to $-.008]$, $t(471)=-3.022$, $p=.003$, $d=.39$. However, these results should be interpreted with caution, as there were considerably more public institutions ($n=279$) than private institutions ($n=194$).

2. An independent samples t-test determined there were differences in Pharmacology Kaplan Integrated Exam scores between ADN and BSN institutions. ADN institutions ($M=.6615$, $SD=.089$), scored higher than BSN institutions ($M=.6298$, $SD=.09$), a statistically significant difference, $M=-.0316$, 95%CI $[-.048$ to $-.015]$, $t(473)=-3.647$, $p=.000$, $d=-3.5$.

However, these results should be interpreted with caution, as there were considerably more BSN institutions (n=305) than ADN institutions (n=169).

3. An independent samples t-test determined there were differences in Management of Care Kaplan Integrated Exam scores between private and public institutions. Public institutions (M=.7584, SD=.060), scored higher than private institutions (M= .7458, SD .061), a statistically significant difference, $M = -.0126$, 95%CI [-.023 to -.002], $t(472) = -2.23$, $p = .026$, $d = .65$. However, these results should be interpreted with caution, as there were considerably more public institutions (n=269) than private institutions (n=205).

4. An independent samples t-test determined there were no differences in Management of Care Kaplan Integrated Exam scores between ADN and BSN institutions, $p = .339$. These results should be interpreted with caution there were considerably more BSN institutions (n=229) than ADN (n=140).

5. An independent samples t-test determined there were differences in Medical Surgical Kaplan Integrated Exam scores between private and public institutions. Public institutions (M=.7006, SD= .0557) scored higher than private institutions (M= .6843, SD .0726), a statistically significant difference, $M = -.01626$, 95%CI [-.028 to -.004], $t(366) = -2.738$, $p = .006$, $d = .61$. However, these results should be interpreted with caution, as there were considerably more public institutions (n=310) than private institutions (n=209).

6. An independent samples t-test determined there were differences in Medical Surgical Kaplan Integrated Exam scores between ADN and BSN institutions. ADN institutions (M=.71, SD= .065), scored higher than BSN institutions (M= .69, SD.066), a statistically significant difference, $M = -.0175$, 95%CI [-.029 to -.005], $t(526) = -2.789$, $p = .005$, $d = -.02$. However these

results should be interpreted with caution, as there were considerably more BSN institutions (n=377) than ADN institutions (n=151).

Recommendations for Further Study

Based on the successful completion of this research, the following recommendations for additional research are presented.

1. The original objective of the research was to determine if the Kaplan Integrated Exam scores had a significant influence on the pass or fail of a nursing student's first attempt at the NCLEX-RN exam. While the number of respondents was a significant sample size (n=926), there was limited number of failures (n=13). Future research should focus on finding an appropriate sample of students who have taken the Kaplan Integrated Exams. The researcher could possibly look at ex post facto data from individual institutions to receive pass or fail for students versus relying on self-reporting of data.
2. The study should be replicated utilizing equal sample sizes. Since the research indicates public institutions scored higher than private institutions equal samples sizes could confirm this findings. ADN institutions scored higher than BSN institutions with smaller samples sizes therefore having equal sample sizes would confirm the findings of the study.
3. 191 institutions were represented in this study, since students self-reported; some institutions only had one student represented. Researchers should replicate the study including larger sample sizes from multiple schools across the United States.

4. Future researchers should also collect data looking at the sample sizes demographics such as male, female, ethnicity, traditional, non-traditional student etc. to see if this could possibly have an impact on exam scores.
5. Future research should be conducted on the differences between BSN versus ADN programs to determine if there is a difference in NCLEX-RN pass rates, GPA's, Healthcare providers satisfaction with the new grads work performance, and how many go on to further their nursing education.
6. Future research should focus on the curriculum differences between ADN and BSN programs. Are all nursing programs teaching the same content? How are faculties teaching the content?

Recommendation for Practice

The NCLEX-RN is a high stakes examination nursing graduates prepare for by investing financially and mentally for two to four years to ultimately practice as a licensed registered nurse. Identification of factors of student success is imperative for nursing faculty and nursing school administrators. With a national push to hire Baccalaureate prepared nurses but more students choosing the Associate Degree due to financial and time constraints, further research needs to be conducted comparing the outcomes of the two degree programs. Based on the successful completion of this research, the following recommendations for practice are presented.

1. ADN institutions scored higher on the Pharmacology and Medical Surgical Kaplan Integrated Exam scores even though the sample sizes were smaller than the BSN institutions. While further research needs to be conducted with equal sample sizes, it does raise the question for hospital administrators, is there really

- a difference in the ADN graduate versus the BSN graduate? Since more students are choosing the ADN program due to less financial commitment and time constraints, are hospitals not hiring the ADN graduate causing the staffing shortage and not realizing the stress being placed on current staff.
2. In collecting data for this study and reviewing the collection methods for prior research, State Boards of Nursing need to re-examine allowing Schools of Nursing and researchers access to the pass and failures of the first attempts at the NCLEX-RN. Almost all previous research conducted has been ex post facto research that was collected by a university or community college. Nowhere in the literature does it indicate how the researcher or school collected the pass or fail data. When starting this research project, the researcher began inquiring how to collect the pass or fail data after reading through the literature. In the state of Arkansas, schools of nursing are dependent on a nursing graduate reporting the results. The researcher spoke to several Deans of Nursing and all said they no longer receive reports from the State Board of Nursing informing them of their pass/fails but have to either reach out to the student or wait to see their passage rates in the Arkansas State Board of Nursing Publication. Kaplan Inc, also reported they are dependent on a student being honest and telling them whether the student has passed or failed the NCLEX-RN exam. Kaplan, Inc stated this is a limitation to any research study not being able to collect accurate pass/fail data.
 3. ADN institutions scored higher on the Pharmacology and Medical Surgical Kaplan Integrated Exams versus the BSN institutions. These results should be

- examined with caution, but it does raise the question are the ADN and BSN curriculums standardized. One would think the BSN program, which is four years compared to the two year ADN program, would score higher. State Boards of Nursing or the National Council of State Boards of Nursing should look into a standardized curriculum across the United States since the NCLEX-RN exam is a national exam, therefore all programs are teaching similar content.
4. The original purpose of the study was to examine whether the Kaplan Integrated Exams were predictors of NCLEX-RN success. 926 respondents took Kaplan Integrated Exams as part of the curriculum in the nursing programs they were enrolled for the BSN or ADN degrees earned. Only 13 reported failures on the NCLEX-RN first attempt. If students were truthful in their responses, this indicates a 99% chance at passing the NCLEX-RN if a student utilizes the Kaplan products.

Summary

The purpose for conducting this study was to determine if a difference existed on the Kaplan Integrated Exam Scores (Pharmacology, Management of Care, and Medical Surgical) between or among private and public institutions and 2-year (Associate Degree) and 4-year (Baccalaureate Degree) institutions. In order to investigate if a difference existed, secondary data was provide by Kaplan Inc. The researcher looked at the type of institution and the students overall percentage score on the Kaplan Integrated Exam. After descriptive analyses the results demonstrated public institutions scored higher on Pharmacology, Management of Care, and Medical Surgical Kaplan Integrated than private institutions. Associate Degree programs scored higher on Pharmacology and Medical Surgical Kaplan Integrated Exams than Baccalaureate

degree programs and there was no difference between ADN and BSN on the Management of Care exam. Additional studies are recommended, investigating further differences between Associate Degree and Baccalaureate degree programs.

As pressure mounts on schools of nursing to produce graduates that successfully pass the NCLEX-RN on the first attempt, finding a company like Kaplan Inc who provides content mastery exams to enhance student success and progression through nursing school is imperative. Early identification of at-risk students and necessary remediation has potential to increase successful first attempt pass rates on the NCLEX-RN. Preliminary assessment of the unidentified data provided by Kaplan Inc suggests students who complete the Kaplan Integrated Exams have a higher chance of passing the NCLEX-RN on the first attempt as evidenced of N=926 respondents and n=13 reported failures on the NCLEX-RN. However, continued research on the Kaplan Integrated Exams is necessary to establish sound evidence.

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Appendix A
University of Arkansas Internal Review Board (IRB) Approval



To: Lee Ann Danner
From: Chair, Douglas James Adams
IRB Committee
Date: 03/27/2019
Action: **Review Not Required**
Action Date: 03/27/2019
Protocol #: 1810155168
Study Title: Differences in Kaplan Integrated Exam Scores Based on Institutional Factors

Please keep this form for your records. Investigators are required to notify the IRB if any changes are made to the referenced study that may change the status of this determination. Please contact your IRB Administrator if you have any questions regarding this determination or future changes to this determination.

Appendix B
Kaplan Agreement Letter



March 18, 2018

To Whom It May Concern,

Kaplan Nursing, Inc. is committed to partner with Leeann Danner in data collection for her research project "A Study of the Kaplan Integrated Examination Scores and the NCLEX-RN Outcome."

Kaplan Nursing agrees to participate by providing de-identified data for the project.

Correspondence for Kaplan Nursing should be routed through Dr. Susan Sanders at 4910 Lynchburg Highway, Tullahoma, TN 37388 or susan.sanders@kaplan.com.

Sincerely,

Susan Sanders

Dr. Susan Sanders
931-273-5177